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BRITISH BIRDS.

VOL. II.

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A

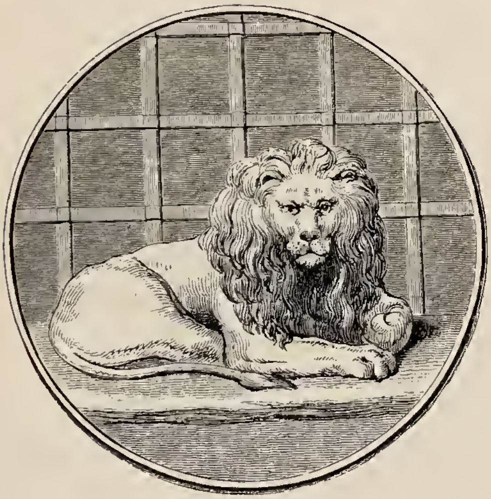
HISTORY

OF

BRITISH BIRDS.

BY

WILLIAM YARRELL, V.P.L.S., F.Z.S.



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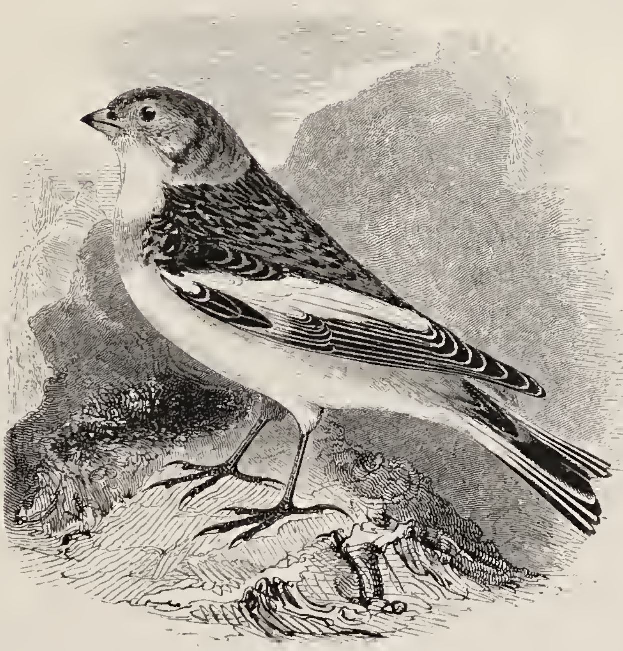
BRITISH BIRDS.

PASSERES. *EMBERIZIDÆ.*



PLECTROPHANES NIVALIS (Linnæus*).

THE SNOW-BUNTING.

Plectrophanes nivalis.

PLECTROPHANES, *B. Meyer* †.—Bill hard, conical and short; the upper mandible narrower than the lower, the edges of both inflected and those of the latter sinuated; the palate furnished with a projecting bony knob. Nostrils oval, basal and placed somewhat near the culmen, nearly hidden by small feathers. Gape angular. Wings long and pointed: first primary finely attenuated and so small as to seem wanting; second and third nearly equal and the longest in the wing, but the fourth is considerably longer than the fifth. Tail moderate and slightly forked. Tarsus scutellate in front, covered at the sides with an undivided plate, forming a sharp ridge behind, about as long as the middle toe. Claws but slightly curved, that of the hind toe elongated.

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* *Emberiza nivalis*, Linnæus, Syst. Nat. Ed. 12, i. p. 308 (1766).

† Zusätze und Berichtigungen zu Meyers und Wolfs Taschenbuch der deutschen Vögelkunde, p. 56 (1822).

Whatever differences of opinion once existed, it has long since been ascertained that the Mountain-, the Tawny and the Snow-Bunting of old authors, are only names for one and the same species in different states of plumage; but to whom belongs the credit of establishing this fact beyond dispute is by no means clear. Linnæus indeed never faltered in his opinion of their identity, though Pennant and, after him, Latham for some time, took the contrary view. Turton, in 1807, was perhaps the first British naturalist who united the three supposed species into one. This was also done on the continent by Wolf in 1810, by Temminck in 1815 and by Koch in 1816; but both at home and abroad they were regarded as distinct by others, and Montagu maintained to the last the separation of *Emberiza montana*, though allowing that *E. mustelina* and *E. nivalis* might be specifically identified, on the evidence apparently of his friend Foljambe, an excellent practical ornithologist,—who in a letter to him said " a few years ago, I shot more than forty from the same flock, during severe weather in the month of January, hardly any two of which exhibited precisely the same plumage, but varied from the perfect Tawny to the Snow-Bunting in its whitest state; the feathers of those of the intermediate state being more or less charged with white."

The Snow-Bunting or Snow-flake is generally considered only a winter-visitor to this country, and to the other temperate parts of Europe; large flocks, consisting chiefly of the young birds of the year, bred in high northern latitudes, annually visiting our islands in autumn. But there is little doubt that some pairs breed every summer in the Highlands of Scotland, while the nest and eggs have been several times found in Unst the most northerly of the Shetlands. Pennant, during one of his tours in Scotland, learnt that they bred on the summit of the highest hills in the same places as the Ptarmigan, especially naming Invercauld, where he had one shot for him on August 4th; and Thornton mentions that he saw some Snow-flakes on the top of a Ptarmigan-mountain near Lochaber August 29th, probably in 1784 or 1785.* It does not appear that the Snow-Bunting was again observed in summer in this district until the middle of July 1874, when Mr. Nicholas Cooke (who had seen several birds on Ben-y-Bhean, one of the Ben Nevis range, July 6th, 1866), as he kindly informed the Editor, saw one in immature plumage on Craig Maige, a hill about 4000 feet high at Loch Laggan. On the other hand the species has been frequently noticed in summer in the neighbourhood specified by Pennant. Thus Macgillivray mentions his having observed a beautiful male bird flitting about the summit of Ben-na-muic-dhui (4300 feet) August 4th, 1830, and his meeting some days afterwards with a flock of eight —evidently a family-party, near Lochnagar† (3700 feet) at the top of which just twenty years later he again saw three examples (Nat. Hist. Dee Side, p. 45), while he states on the authority of three informants that the species breeds on several other mountains in the vicinity. From his earlier experience he had already inferred the probability of the Snow-flake breeding, perhaps in considerable numbers, on the higher Grampians, though he truly remarked that it was impossible for the vast flocks seen on the lower grounds in winter to be exclusively of Scottish origin. In 1859, Mr. Edward asserted (Zool. p. 6597) that he had often met with the bird in different places in Banffshire during summer, but had never been able to detect it breeding. Mr. R. Gray states that he has most satisfactory information as to the species being seen throughout the year on the mountains already named, as well as others near them in the counties of Aberdeen, Banff and Inverness, adding that it was a source of wonder to his informants that they had never found the nest. On June 21st, 1870, Col. Drummond-Hay saw a pair on Ben-na-muic-dhui where he had no doubt they were nesting, and in 1871 Mr. Harvie Brown heard that young birds had been again seen on Lochnagar. Mr. Gray also learnt from Mr. William Hamilton that on July 12th, 1868, that gentleman and his brother saw, on the top of Scuir Ouran, a hill some 4000 feet high on the borders of Inverness and Ross, two pairs of Snow-Buntings, which no doubt were breeding, and the same naturalist also states that near Gairloch, in the western part of the latter county there is a group of high mountains which are likewise frequented by these birds in summer, while Mr. John Bateson of Shielday has lately informed him that they breed in a range of precipitous hills in that neighbourhood.*

---

* The year in which the Colonel's expedition was made seems to be nowhere stated in his book, and the present Editor only gives it approximately from internal evidence.

† It must not however be supposed that the "Snow-flake" of Byron's poem on this mountain refers to the bird.

In the posthumously-published 'Birds of Shetland' of the lamented Dr. Saxby it is stated that a few Snow-Buntings invariably remain throughout the summer in those islands. Many years ago, having observed them in pairs from May till August on the hill and cliffs of Saxaford in Unst, he became convinced that they must breed there, and his suspicions were strengthened by seeing two of their eggs among the spoils of a local dealer. However he says "No certainty in the matter was arrived at until the 2nd July 1861, when a man discovered a nest and three fresh eggs, all of which he brought to me. He had found them in the crevice of a rock near the top of one of the high sea-cliffs at Burrafirth, below the hill of Saxaford. The nest was rather shallow, and was composed of coarse grass and fibrous roots, lined with wool and fine hair of horses and cows. After this I often observed the birds in the breeding season, once in July, about the cliffs at Graveland, but usually near the old spot." In 1867 Saxby again obtained three more unidentified specimens, and in 1871 a nest and four eggs which had been found the preceding summer among the stones of a demolished cairn in Saxaford. This nest is described as being very like the former one, but it was a little thicker and contained a few pieces of fern in the walls.

In the Færoes a considerable number of Snow-Buntings pass the summer. On the more southerly of the islands they are restricted to the mountain-tops, but on the more northerly they frequent the lower grounds in small colonies. Wolley found a nest with almost fully-fledged young and an addled egg on the Loisinga Fjæld, July 13th, 1849, but on that hill, in 1872, Capt. Feilden searched carefully without coming across a bird. Throughout Iceland the species is perhaps the commonest of small birds—a pair or more being established in nearly every convenient locality, even among the most desolate lava-streams, and it breeds there almost on the sea-level as well as up to the snow-line. According to Faber it winters in that island. In Spitsbergen it is the only Passerine bird which is ordinarily met with, and though it can hardly be called very numerous there it breeds almost as far to the northward as the land extends. It is doubtless only a summer-visitor, and Dr. Malmgren observed a large flock at sea in the latitude of Bear Island on May 19th, which after resting for a short time on the rigging of the vessel pursued their way in the direction of Spitsbergen. In Nova Zembla Mr. Gillett found it to be very common, and according to Dr. von Heuglin its southward migration thence begins in the middle of September. It breeds throughout Norway, both on the more northern islands of the coast and on the higher fells of the interior, especially within the Arctic Circle, but also on some of the southern mountains, even in Thelemark so low as lat. 60°. Except those on or near the frontier there are few hills in Sweden of sufficient altitude to afford this species a congenial home, but on such as are high enough both there and in Finland it is almost unfailingly to be observed. In Russia the southern limit of its summer-range does not seem to be recorded, but it is believed to breed on the eastern slopes of the Ural, and thence across the most northern portion of Siberia to Behring's Strait—its distribution at that season being probably as much affected by elevation above the sea-level as by latitude. Throughout the most northern parts of the New World it also breeds, and in many places very abundantly, so that its summer-habits have there been well observed, and for a long time the accounts given by the older explorers of the Arctic coasts and islands of America furnished almost all the information possessed by naturalists concerning its nidification. But here again the southern limit of its breeding-range seems to be unknown. Audubon mentions a nest found on the White Mountains of New Hampshire, but from the description we may almost safely pronounce that it did not belong to this species. Mr. Allen however, on the authority of Mr. C. W. Bennett, states that a pair reared their young in 1862 at Springfield in Massachusetts. Still Mr. Reeks believes that the Snow-Bunting can hardly breed in Newfoundland, where one would expect that it should, though he saw many there in June 1868. In Greenland it is very abundant and breeds generally throughout the country, for it was even observed by Dr. Pansch to be the commonest land-bird on its seldom-visited east coast.

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* Capt. Kennedy thinks that it also breeds in the Orkneys (Zool. s.s. p. 3914).

As already intimated on the approach of autumn the Snow-Bunting migrates southward from most of its breeding-quarters. In Iceland indeed it is found all the year round, though we may presume that those which remain there are comparatively few, and large flocks visit the Færoes in winter-time, but in Norway at that season it rarely occurs in the most northern districts. From Tromsö, however, southward it frequents the coast-region in countless numbers. These countries supply most of the examples which regularly resort to our own islands and in some years appear in vast flights. The beginning or middle of October is usually the time of their arrival, but a few stragglers are occasionally seen in September*, and though severe weather generally drives them further to the southward, in many localities they abide with us till the end of March or beginning of April. During their stay with us the greater number affect rough ground or open fields near the sea-coast, but from time to time small parties occur far inland, so that there is hardly a county in the three kingdoms in which the species is not known to have been observed—its appearance in the south of both England and Ireland being, however, far less frequent and regular than in the north. Elevated moors and uplands generally are, almost equally with the localities just named, a favourite resort, and when these are covered with snow the birds descend to the lower grounds where larger supplies of food are to be obtained. "Their call-note is pleasing," remarks Selby, "and often repeated during their flight, which is always in a very compact body; and frequently before settling on the ground, they make sudden whirls, coming almost in collision with each other, at which time a peculiar note is produced." So close indeed do they fly that one of Thomson's correspondents states that he had killed thirty at a single shot, and they crowd together as much when they alight, so that Mr. Lubbock likens the appearance of a flock at rest to "a variegated carpet." Saxby writes "Seen against a dark hill-side or a lowering sky, a flock of these birds presents an exceedingly beautiful appearance, and it may then be seen how aptly the term 'Snow-flake' has been applied to the species. I am acquainted with no more pleasing combination of sight and sound than that afforded when a cloud of these birds, backed by a dark grey sky, descends as it were in a shower to the ground, to the music of their own sweet tinkling notes." Their food in winter seems to be chiefly grass-seeds, so long as these are forthcoming, but on the sea-coast near the Humber, it consists almost exclusively of the seeds of *Schoberia* or *Suæda maritima*, as mentioned by Mr. Cordeaux, and the Editor is able to state the same fact as regards the west of England from examples sent him by Mr. Cecil Smith and examined by Mr. Hiern. On occasion they will also eat corn—especially oats. Thompson states that once in the north of Ireland they did great harm by picking the sown wheat from the ridges, and Dr. Gordon informs the Editor that they yearly do considerable damage in this way on the shore of the Moray Firth. In America Wilson found them, in October, feeding not only on the seeds of water-plants but on the shelled mollusks which adhered to the leaves. On the ground, and in Western Europe they seldom perch on a tree or bush,* they run with ease and speed after the manner of Larks, and like those birds are easily netted or snared. They are commonly fat and well-flavoured. In confinement they seldom live long except under very favourable conditions†.

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* The earliest date for England is perhaps Sept. 16th, 1875, on the Lincolnshire coast, of which Mr. Cordeaux has informed the Editor; but in the South-west of Scotland Capt. Kennedy has observed it in July and August (Zool. s.s. p. 3914). These birds may have been bred in Great Britain.

On the continent the Snow-Bunting is a regular winter-visitor to the north of France, central Germany and all the countries between these parts and its breeding-haunts. Stragglers occasionally wander further and have been obtained though rarely in the south of France, Switzerland and Italy. Two examples are said to have been caught at Malta in 1840 but possibly the species was mistaken.‡ Nevertheless Tyrwhitt Drake saw a specimen, since examined by Col. Irby, which had been picked up dead at Cape Spartel near Tangier, and Mr. Godman mentions the appearance of a flock of about a score on Corvo, one of the Azores, in the winter of 1864–65, while an example killed in Fayal, another island of that group, was subsequently sent to him. There is no record of its occurrence in Portugal or Spain, and it seems to be equally a stranger to Greece or Turkey though it occasionally visits the Crimea. In Asia we have no information as to the southern limit of its winter migration, but Mr. Swinhoe says that it visits the north of China in cold weather, and the Zoological Society has received a living example from Japan. In America its distribution in winter seems to depend almost entirely on the severity of the season and especially on the amount of snow which may fall, but it is believed not ordinarily to penetrate further towards the south than lat. 35° N. and on the Pacific coast not so far. In the Missouri valley and in New England it is often exceedingly abundant. In the Bermudas it is said seldom to fail making its appearance in December and January, sometimes in considerable numbers. From all southern districts, on the approach of spring, it again returns to the northern latitudes whence it came.

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* In North-eastern Russia, however, Messrs. Brown and Seebohm saw them repeatedly perching, both singly and in flocks, upon trees. Audubon in America speaks of their frequently alighting on trees (Orn. Biogr. ii. p. 516), but Dr. Coues (Birds of the Northwest, p. 119) says he has rarely seen them do so. Such is certainly not their habit with us, and the instance to the contrary recorded by Mr. Murray Matthew (Zool. p. 6208) is possibly unique. The statement in the published version of Linnæus's Lapland journal (Lachesis Lapponica, ii. p. 97) respecting the people who with a crossbow-bolt "take successful aim at the *Emberiza nivalis* or Snow-Bunting sitting on the top of the most lofty pines" is such that no ornithologist could suppose was made by one so well acquainted with this species as his account of it (Sw. Vet. Ak. Handl. 1740, p. 368) shews him to have been, and therein he expressly says that it does not commonly sit upon either bough or bush ; but it is satisfactory to the Editor to say, after consulting the original manuscript (p. 260) in the possession of the Linnean Society, that the translator mistook the words "*små Sparfver*" (small Sparrows) for "*Snö-Sparfver*" (Snow-Sparrows) and thus led Sir James Smith to the further error of introducing the scientific name of the latter.

† They have however been more than once known to breed in captivity, and Mr. Stevenson possessed a pair which in two successive seasons built a nest inside some rock-work in his aviary. It was indeed inaccessible to his examination but the birds were seen for some days carrying into the hole a large quantity of materials, and soon after the hen used only to appear at long intervals and then for but a few minutes at a time, feeding hastily like a sitting bird and returning to the hole which was jealously guarded by the cock. This went on for about a fortnight when it was supposed that the eggs were hatched, but the young probably died in a few days owing to the want of proper food, for the parents soon abandoned the hole.

‡ The Snow-Finch (*Montifringilla nivalis*) from its general resemblance to the Snow-Bunting has in several cases been the cause of error as to the occurrence of the latter in the south of Europe. The bill and hind claws however afford ready characters whereby the one bird may be distinguished from the other.

Many of the dreariest places in those countries are enlivened by the Snow-Bunting making its home among them. From his perch on some moderate elevation the cheerful, not to say melodious, song of the cock, conspicuous in his pied plumage, gladdens the heart of the traveller over the wildest lava-streams and most barren moors of Iceland, and in lands still more desolate, or even totally destitute of human inhabitants, the agreeable effect of his notes is heightened. But the song, or part of it, is also often delivered on the wing, the bird springing into the air and hovering some ten feet or more above his wonted seat to which on its conclusion he again repairs, or he will flit to some similar station an hundred yards off and thence renew the performance; while his chosen partner, whose more dusky attire makes her less easily seen, is busily engaged in getting her living from the scanty herbage that sprouts between the massive rocks and stones with which the ground is thickly strewn,* or idly basks in a sheltered nook where the slanting rays of the northern sun shed a warmth that though feeble is not despicable. Each pair of birds seems to occupy at this season a limited and almost definite range, the invasion of which is instantly resented by the cock, who with a defiant note darts towards the intruder, when there follows a fierce fight only terminated by the conquest and flight of one of the antagonists, whereupon the victor returning to his citadel celebrates the triumph in his loudest strain and most fantastic dance. Even the fitful changes of the stormy summer of these countries do not altogether quell the spirit of this brave little bird, and through driving sleet or thick fog he may still be heard at his post, while with the first gleam of sunshine he is again as gay as before. When his mate is sitting he will often wander to a considerable distance, but his quickness in perceiving the moment that she, however silently, leaves the nest is something wonderful, and his instantaneously rejoining her shews that he has never been forgetful of his duty. This feature in his character makes the discovery of the nest by any one who has a fair amount of patience almost a matter of certainty. By keeping an eye on the actions of the cock the hen must sooner or later be found, and if incubation be begun not many minutes will then pass before she cautiously commences her return. This she generally accomplishes by a circuitous route, and, creeping close to the earth, taking advantage of every inequality of the ground so as if possible to keep out of the spectator's sight, her movements are hard to follow, and occasionally the birds'-nester will find that her ingenuity has been too much for him. But prudence and a little experience will generally reward his efforts and enable him to mark her disappearance in the mass of stones or chink of a rock in which is the object of her care. Yet to reach the nest when its place is thus discovered is often a work of toil. It may be at the end of a long and tortuous approach, requiring the removal one by one of many stones of various sizes, it may be ensconced behind some huge boulder which needs all the engineering resources of the seeker to stir or, buried securely beneath a slab of earthfast rock, it may completely defy his power.* Then too his hopes are often disappointed, for, despite his utmost precautions, at the last and critical moment some earth or splinters of stone loosened by lever or wedge may be found to have fallen in upon and cracked the eggs as they lie. All these circumstances generally combine to render the successful taking of a Snow-Bunting's nest one of the most delicate and exciting operations on which an oologist can enter, except that personal danger is seldom if ever involved.†

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* In Arctic America at this time the food is said by Richardson to be buds of *Saxifraga oppositifolia*, one of the earliest of northern plants.

As is shewn by the accumulation of old materials often found therein, the birds commonly use the same nest-hole more than once. A rude collection of dry grass, moss or any other plants that may be growing near forms the foundation and outworks of the nest. This is hollowed out to receive a quantity of finer grass and roots substantially woven into a bowl, which will occasionally bear removal from the outer mass without losing its shape, and is lined with hair or soft feathers—especially those of the Ptarmigan of the country. Herein are laid the eggs, from four to six or even eight in number, measuring from ·91 to ·82 by from ·65 to ·57 in. They are white, more or less tinged with pale greenish-blue, on which are patches of lilac, sometimes very bright but generally dull, the whole closely or sparingly spotted, streaked and splashed with deep brownish-red, upon which again are frequently a few apparently black spots and irregular lines. Some eggs when fresh are of exceeding and almost indescribable beauty.

It remains to add that the young, soon after they are hatched, are clothed with dark sooty down, and are fed, as would appear from Herr Collett's observation, chiefly on the larvæ of *Tipulidæ*. Their plumage when they have left the nest will be presently described, and they accompany their parents for some time, perhaps until the advancing season gives all warning to depart for other lands. Then the different family-parties unite in bands whose numbers are daily swollen by fresh adherents until they form a mighty host that with the first frosts of winter takes wing over the southern seas.

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* Capt. Lyons found a nest placed in the bosom of the corpse of an Esquimaux child on Southampton Island.

† Pages might be written on the breeding-habits of this species without exhausting the subject. The Editor has necessarily to be brief here and only to describe what seems to be absolutely requisite to give a slight notion of them. To him the Snow-Bunting will always be one of the most interesting of birds, from the many hours he has passed in watching its behaviour.

The adult male in breeding-plumage*, of which a good representation is given by Bewick, has the bill black: the irides hazel: the head, neck and all the lower parts pure white, though in some examples the top of the head and the nape are mottled with black, and there is generally a black spot visible above and behind the ears. The upper wing-coverts, except those of the bastard-wing which are black, and the secondaries white; but the latter are often black towards the extremity, though their tip seems to be always white; and in some examples the middle wing-coverts are also black, bordered with greyish-white, forming a distinct black bar across the wing; the primaries and tertials are black, the former however white at the base, and the latter often bordered outwardly with white; the back is jet-black, mottled more or less on the rump with white; the three inner pairs of tail-quills black, occasionally slightly bordered or tipped with white, but the three outer pairs are nearly white, with a black patch towards the tip: the legs, toes and claws black.†

The adult female, at the same time, much resembles her partner, but the white on the head and the rest of the upper parts is much more mottled with black and dusky, and her colours are not so pure.

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* In this state English specimens are very rare: one was killed in the grounds of Mr. Wortham, at Royston, May 22nd, 1840, and given by him to the Author of this work; a second, "pretty far advanced," was shot near Penzance in April, 1864, as recorded by Mr. Rodd (Zool. p. 9109); a third, in "full summer plumage," was obtained, according to Mr. Dutton (Zool. s.s. p. 792), April 14th, 1867, at Eastbourne, and a fourth, in "full breeding plumage," at the same place early in July, 1872, as mentioned by Capt. Kennedy (Zool. s.s. p. 3914).

† The birds which in breeding-plumage exhibit the black mottling of the head and the black bar on the wings are most likely those in which the white tip of the feathers is worn off more than in the others.

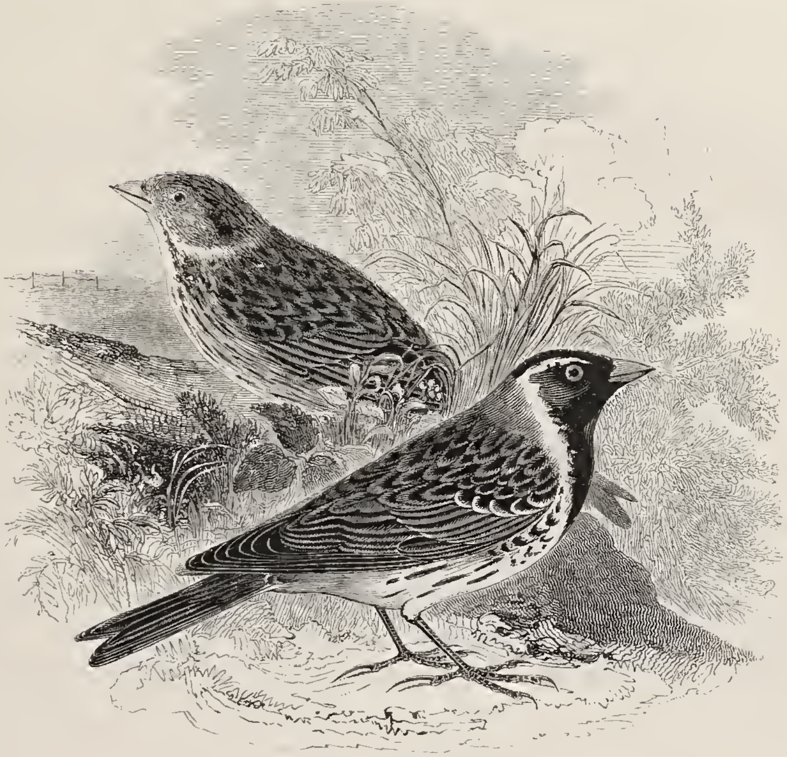
The young, in its first plumage, has the bill yellow, dark at the tip of the upper mandible, the head, sides of the neck and the back are of a greyish-olive, variegated towards the rump with reddish-brown; the white of the wings is also tinged, and the quills of both wings and tail are bordered with the same colour; the throat and lower parts are dirty white, tinged on the throat and belly with pale yellow, and on the breast and flanks with reddish-brown.

The adult male, on its arrival here towards winter, as figured at the head of this article, has the bill yellow, darker at the tip: top of the head and the ear-coverts more or less covered with deep reddish-brown on a white ground; the feathers on the back black at the base, with broad ends of pale reddish-brown; the wings much as in the summer-plumage except that the tertials are broadly bordered with dull chestnut; upper tail-coverts black at the base with broad ends of pale reddish-brown or, in some examples, of white, and hardly shewing any of the first colour; the tail as in summer; all the lower parts dull white, more or less tinged with reddish-brown on the breast and flanks. In this state it has been called the Tawny Bunting; when presenting less white than the figure here given, it is in the state called the Mountain-Bunting.

The female at the same time, figured by Bewick as the Tawny Bunting, has the top of the head dull chestnut-brown, which becomes paler on the nape; the whole upper surface mottled with blackish-brown and dull chestnut; the wings shew but little white except at the tip of the lesser coverts and the base of the secondaries; the white of the tail is less bright; the chin and throat are dull chestnut, becoming deeper in tone across the upper part of the breast, the rest of the lower surface dull white.

The whole length of the male is about seven inches. From the carpal joint to the end of the longest quill-feather, four inches and a quarter. The females are a little smaller.

Systematic ornithologists long ago recognized the distinctness of the families *Emberizidæ* and *Fringillidæ*, but of late most authors have shewn a disposition to merge the former in the latter. Very recently Prof. Parker has ascertained the existence in the *Emberizidæ* of an additional pair of palatal bones (the "palato-maxillaries," as he calls them) which are wanting in the normal *Fringillidæ*, and this discovery will probably lead to a restoration of the older view; but it would seem that certain American forms, as *Cardinalis* and *Phrygilus*, hitherto unhesitatingly assigned to the *Fringillidæ*, also possess these bones, and will therefore have to be included among the *Emberizidæ*, though it is not at all impossible that among the birds of the New World some will be found which, by the structure of their palate, bridge over the gap between the two families. The palatal knob, so characteristic of most of the Buntings—especially those of the Old World—is, according to the same investigator, formed by a swollen ingrowth of the dentary edges of the premaxillary mass. The Linnæan genus *Emberiza* has been split into many groups by various authors. Several of these obviously do not deserve recognition as genera, the characters which distinguish them being very trifling; but the present species and the next differ so much from the normal Buntings in the form of the wing, in the straight hind-claw, and in their habit of running and not hopping on the ground and of singing in the air, that the admission of Bernhard Meyer's genus, *Plectrophanes*, for their reception would appear to be needed.



PLECTROPHANES LAPPONICUS (Linnæus*).

THE LAPLAND BUNTING.

Plectrophanes Lapponica.

The Lapland Bunting, a native, as its name imports, of the most northern parts of Europe, and even of the Arctic Regions pretty generally, has been taken on several occasions in this country. The first instance was announced to the Linnean Society by Selby, early in 1826, the bird having been found in Leadenhall Market, whither it had been sent with some Larks from Cambridgeshire, and after being preserved by Mr. Weighton of the City Road, passed into Vigors's collection, which was subsequently given to the Museum of the Zoological Society. The second example was caught on the downs near Brighton, in or prior to 1827, and kept caged for some months, when it came into my own collection (Trans. Linn. Soc. xv. p. 156). The third was also taken alive in September, 1828, a few miles north of London, and its capture made known by Mr. Gould (Zool. Journ. v. p. 104). The fourth, caught near Preston in Lancashire, in October, 1833, was selected from a variety of other small birds in the Manchester market, and is now preserved in the museum of that city. The fifth is recorded (Zool. p. 316) as having been obtained in the summer of 1843 near Milnthorpe in Westmoreland. Each of these examples exhibited the plumage of the less conspicuous bird in the woodcut here given. On September 30th, 1844, an adult male was netted with some Larks on the downs near Brighton; and this specimen, which I have seen in the possession of Mr. Borrer, is in the plumage of summer as represented in the lower figure, but undergoing a slight change from the advance of the season.

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* *Fringilla lapponica,* Linnæus, Syst. Nat. Ed. 12, i. p. 317 (1766).

Since this date the occurrence in England of more than a dozen examples has been put on record. Most of them were caught alive, and kept for a longer or shorter time in captivity. Three of them are said to have been taken near Brighton, three not far from London, four in Norfolk, two in the neighbourhood of Shrewsbury, one near Southport in Lancashire, and one near Durham. In most cases the birds were associating with Larks, and no mention is made of any one of them being accompanied by others of its own species. The Lapland Bunting is stated to have been found twice in Caithness, the only instances of its being observed in Scotland; but its appearance in Ireland has not been recorded.

The home of this species is neither so far to the northward nor in such alpine heights as that of the preceding. It never verges on the line of perpetual snow nor inhabits the stony wastes so much affected by the Snow-Bunting, but prefers the upland swamps where there is a thick growth of low willows and other plants characteristic of such spots, especially if there be also an abundance of long grass. These places are in Lapland equally the resort of the Bluethroat, the northern form of Yellow Wagtail, the Red-throated Pipit and the Titlark; but this Bunting will also frequent higher levels than any of those birds, the last only excepted, and may be found in colonies where the cloudberry and the dwarf birch form the prevailing vegetation. Arriving from the south at such bogs, so soon as the surface-soil is thawed, the cock-birds are fond of displaying their gay plumage to the best advantage on any elevated perch, and rising in the air deliver, while hovering on the wing and then gently gliding to another station, a song that though not marked by any brilliant notes has a tone of sweetness; yet the gesture by which it is accompanied supplies its principal attraction. When not singing they mostly occupy themselves in chasing or being chased by one another, or, sitting on the most prominent position available—and it must be said that any prominent position on a bog of this kind is comparatively humble—from time to time utter a rather harsh though plaintive note. The preliminaries to the breeding-season being ended, this species is usually seen in pairs, but the several pairs do not evince that dislike of their neighbours' society which is so characteristic of the Snow-Bunting, and thus the same suitable moss or portion of a moss, often of very limited area, will accommodate a dozen or more pairs which, the exciting period just mentioned being past, soon enter peaceably upon the work of nest-building. For this purpose the shelter of a thick tussock of grass, the base of a ligneous shrub or any inequality the ground itself may present is chosen, and the foundation is laid with the usual rough materials. Within this a cup-shaped nest is formed, chiefly of the stems of dry grass, and then a bedding of soft feathers is superimposed. This lining, according to the Editor's experience, invariably* distinguishes the nest of the Lapland Bunting from that of any other bird frequenting the locality, and therefore deserves especial mention, since the eggs, from five to seven in number, not uncommonly so closely resemble those of the Red-throated Pipit (*Anthus cervinus*), Titlark and even the Reed-Bunting (which occasionally finds its way to the breeding-haunts of the present species) that they cannot always be picked out. They measure from ·87 to ·78 by from ·61 to ·55 in., and have a clay-coloured or pale greyish-chocolate ground, suffused with darker reddish-brown, on which are seen spots, blotches and curved lines of a darker shade of the same tint, in many places distinct, but the larger markings generally with blurred edges.

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* Richardson, however, writing of this bird in Arctic America, says that the "nest is lined very neatly and compactly with deer's hair." He was an observer so scrupulously accurate that one can hardly doubt his word, yet it is to be remarked that it seems just possible for him to have mistaken the nest of one of the allied North-American species (*Plectrophanes pictus*, which is said not to use feathers, for example) for that of the Lapland Bunting. Nests of this last

When the young have left the nest they accompany their parents for some time, and the family-parties unite towards the end of the summer, but it does not appear that this species ever forms very vast congregations—indeed it is hardly anywhere sufficiently numerous to do so, being generally a local bird. In Europe its breeding-range seems not to extend further southward than lat. 62° N., and that only in the mountain-districts of Norway, while in Sweden, Finland and Russia its summer-limit, though from want of information not to be determined, must lie much more towards the north. In Asia also it cannot be said to be known to breed outside of the Arctic Circle, but in Eastern Siberia it is apparently more abundant than elsewhere in the Old World, since in autumn Mr. Swinhoe found it in the market at Tientsin by thousands which had doubtless been bred to the northward. In the New World it breeds on the most western of the Aleutian and on the Prybilov Islands, as well as in Alaska. The Hepburn Collection in the Museum of the University of Cambridge contains a specimen in full summer-plumage from Fort Simpson in British Columbia, which is perhaps the

obtained by Mr. H. W. Elliott on the Prybilov Islands are said to have contained feathers, and those from Greenland, of which the Editor has seen several, are profusely lined with them. It may here be mentioned that eggs of this bird from Greenland are on the average distinctly larger than those from Lapland.

most southern locality known for the species in America at that season, though Mr. Trippe's observations in Minnesota induce him (Proc. Essex Inst. vi. pp. 113–119) to think that it may breed in that State. Richardson states that it breeds in moist meadows on the shores of the Arctic Sea, and that is also the case along the west coast of Greenland, while the German Expedition obtained it full summer-dress at Shannon Island on the east coast. Mr. Dresser was informed by Herr Benzon that he had received its eggs from Iceland, but the species must be rare in that island if indeed there be more than the one unquestionable instance of its occurrence, in 1821, as recorded by Faber.

The line of this bird's migration has been supposed to lie a good deal to the eastward, for though, as already said, it is in summer pretty widely distributed in Norway and Lapland its occurrence at other seasons has been but seldom recorded in the western part of the continent of Europe. This remark applies even to the lowlands of Central and Southern Norway and Sweden, and it has only been observed as an irregular autumnal visitor to Denmark, many districts in Germany, Holland, Belgium and France. But on the other hand this apparent rarity is most likely due to its being overlooked in those countries, since Mr. Cordeaux, on Mr. Gätke's authority, says that in Heligoland it is so common in autumn as not to be considered worth shooting. In severe winters it has been met with much further to the southward, even in the neighbourhood of Montpellier, as well as in Piedmont and in Lombardy, but it does not seem to reach Central Italy. Its occurrence near Geneva was long ago recorded by Necker, and further eastward it has been met with in the Vienna market and at Lemberg. In Central and Southern Russia it is said to be very rare, but about Moscow and Jaroslav a few are met with in spring and autumn, but not every year. Across the Ural—which chain of mountains it has from the time of Pennant been known to frequent, while it has even been supposed to breed near Ekaterineburg—it becomes more abundant, and, according to Eversmann, is very common on the Kirgis Steppes. Thence we have no intelligence as to the extent of its winter-migrations till we come to China, its appearance in the northern parts of which country has been already noticed. In America the limits of its range at the same season are also uncertain, but it would seem not to reach California on the west, further to the southward than the Upper Missouri in the interior, or Kentucky and Pennsylvania for the eastern part of the continent. Richardson never met with this species in the Fur-countries during winter, but in 1827 it appeared on the plains at Carlton House about the middle of May and on the newly-ploughed land at Cumberland House, which is a little further to the north, a few days later; but in the preceding year many were seen early in May at Fort Franklin, though that is situated within a degree of the Arctic Circle. The latest collections, made by Kennicott and others, in this part of the Dominion of Canada speak to the abundance of the Lapland Bunting near the Mackenzie River and the Great Slave Lake.

In its fondness for swampy places and its general appearance this bird much resembles our common Reed-Bunting, so that it may have been often mistaken for that species; but, though frequently perching on bushes, it runs on the ground as does the Snow-Bunting; and, except in the breeding-season, has many times been observed in company with the latter or associated with the Shore-Lark. As to its food little has been ascertained. The crops of those killed at Fort Franklin were filled, says Richardson, with the seeds of *Arbutus alpina*, but the Chinese, according to Mr. Swinhoe, take them in springes baited with the small maggots which are found in decaying millet-stalks, these birds must therefore have a strong fancy for animal food even in winter. Herr Collett found only small insects and gravel in the stomachs of those which he examined during the summer in Norway.

The adult male in full breeding-plumage has the bill yellow, with the point black: irides hazel: the whole of the head velvet-black*, with the exception of a streak of yellowish-white which, beginning at the nostril, runs on either side over the eyes, where it becomes a broad stripe, and passes above and behind the ear-coverts to the sides of the neck whence it turns downward to the throat; beneath this stripe a collar of bright chestnut, widest on the nape of the neck, extends forward to a point on either side; the back, rump and upper wing-coverts, dark brown with lighter edges, those of the smaller wing-coverts being whitish, the rest reddish-brown, which becomes almost chestnut on those of the greater coverts and tertials; the other flight-feathers blackish-brown, with a narrow light outer margin; the tail-feathers also blackish-brown, with narrow lighter edges, but the two outer pairs have an angular patch of white and a brown shaft-mark towards their tip; beneath, the black of the head descends to the throat and upper part of the breast, where it forms a fine gorget surrounded by the white stripe already described; the rest of the lower parts dull white, the sides of the breast and flanks being streaked with black: legs, toes and claws, pitch black.

The whole length is about six inches and a quarter. From the carpal joint to the end of the wing, three inches and five-eighths.

The female differs in wanting the conspicuous black head and gorget, and in having the top of the head blackish-brown, the feathers tipped with wood-brown, the under portion of the ear-coverts and a stripe from the corner of the mouth black—the rest dull yellowish-white; the chin and throat dull white with a black line descending from each corner of the lower mandible, which there uniting with the stripes from the mouth forms an ill-defined patch on the upper part of the breast; the chestnut collar is smaller and less bright than in the male and is more or less mottled with dark brown; the rest of the plumage is nearly alike in both sexes.

After the autumn-moult the male has those parts which were black in summer, as well as the chestnut collar, mottled with dark brown and white. The darker hue of the breeding-dress is produced by the buff edges of the feathers dropping off.

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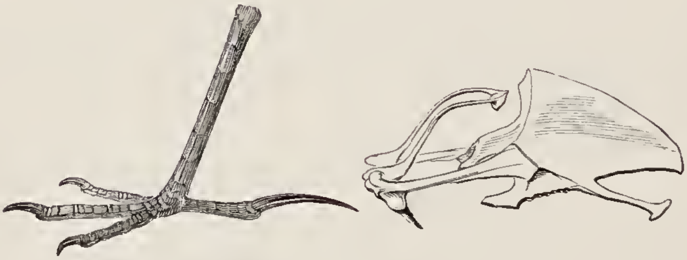
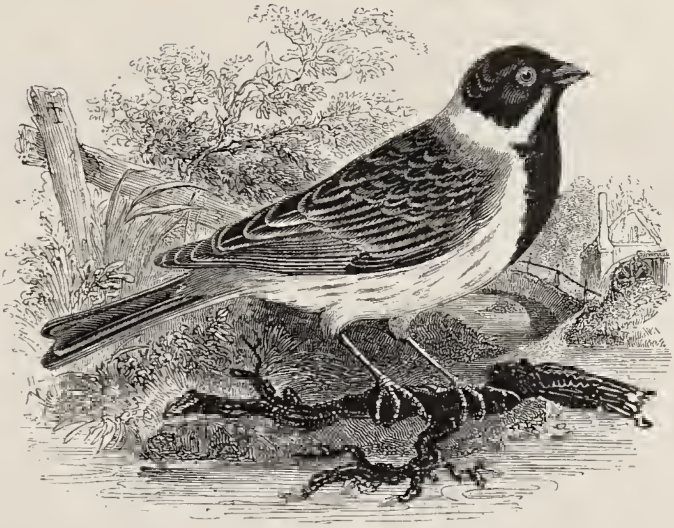
* If the plumage be not quite perfect there is generally a trace of a light median streak on the occiput.

My own young bird has the bill brown: the whole plumage dark brown, with light brown edges; wing- and tail-quills brownish-black; throat, breast and all the lower surface, pale brown, spotted with darker brown on the breast and flanks: legs, toes and claws, light brown.

The vignette represents the foot and sternum of this species.





EMBERIZA SCHŒNICLUS, Linnæus[*].

THE REED-BUNTING.

Emberiza schœniclus.

EMBERIZA, *Linnæus*[†].—Bill hard, conical and short; the upper mandible not wider than the lower, the edges of both inflected and those of the latter sinuated; the palate generally furnished with a projecting bony knob. Nostrils oval, basal and placed somewhat near the culmen, partly hidden by small feathers. Gape angular. Wings moderate: first primary finely attenuated and so small as to seem wanting; second, third and fourth generally nearly equal, the fourth or fifth commonly the longest in the wing and considerably longer than the next. Tail rather long and slightly forked. Tarsus scutellate in front, covered at the sides with an undivided plate forming a sharp ridge behind, almost as long as the middle toe. Claws considerably curved, that of the hind toe of moderate length.

THE REED-BUNTING, or Reed-Sparrow[‡], as it is most commonly called, is a well-known inhabitant of marshy places and the sides of running or stagnant waters where they are bordered by alders, osiers, reeds or rushes; and, though local from its partiality to such situations, it is not a rare species in this country, where it remains throughout the year, shifting its haunt however to some extent according to the season, and in hard weather not unfrequently joining the congregations of other Buntings and Finches which assemble round corn-stacks and in barn-yards, occasionally far away from water.

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[*] Syst. Nat. Ed. 12, i. p. 311 (1766).

[†] *Tom. cit.* p. 308.

[‡] The name of Black-headed Bunting, first applied to this species by Beilby (who wrote the text of the first volume of Bewick's well-known work) and adopted in former editions of these volumes, had already been appropriated by Latham to a perfectly distinct species. As the latter has now to be included as a "British Bird" there seems to be no choice left but to fall back upon the older and far more generally used name of Reed-Bunting.

The contrast of the black head of the cock-bird in spring or summer with the white collar on the neck, and the varied colours of the back, give it an agreeable appearance, and it is accordingly a pretty general favourite. If suitable localities are visited, the male during the breeding-season may be seen perched on a conspicuous spray by the water-side, amusing his mate and himself for an hour together with his song, which consists of an interchange of two or three notes, the first of which are short and the last of all long. This song, repeated at brief intervals, has a family-likeness to that of the allied species, but, apart from its seeming harmony with the dreary spots the bird often frequents and enlivens, it must be deemed wanting in melody, and when heard, as it may also be, in a fertile valley amid the voices of other birds sounds harshly and out of place. The nest is generally built on the ground among long grass or rushes, at the foot of a thorn or on the side of a bank, more rarely in a low bush, elevated some few inches above the ground; but Jardine states that he has frequently found it on a young spruce-fir, at the height of from one to three yards. It consists of coarse grass with a little moss, lined with finer grass and hairs, or in places where reeds abound the feathery tops of those plants often form the sole lining and the greater part of the structure. The eggs are from four or five to seven in number, of a pale purple-brown or clay-colour, spotted, blotched and streaked with a darker purple-brown or black, and measure from ·83 to ·7 by from ·62 to ·56 in. Incubation often begins at the end of March, but a second nest is generally made, and perhaps even a third brood is produced in July. Several observers have recorded the artifices to which this species has resort to distract the attention of man from its progeny. The most common of these is the feigning of lameness by the mother-bird, who with trailing wing or leg, as if disabled, will shuffle through the herbage for a considerable distance; but at times the cock will also enter into the wiles of his mate, and both parents will display an extraordinary amount of solicitude in regard to a spot which does not harbour the young with the consequence of misleading the intruder, if at all wanting in experience, from the place where they lie. The food of the Reed-Bunting is grain, seeds (chiefly those of grasses) and insects —on the larvæ of which last the young are especially fed— with small freshwater crustaceans and mollusks, and its stomach usually contains much fine gravel.

By some of the older naturalists the song and the nest of the Reed-Wren and Sedge-bird already described (vol. i. pages 369 and 376) have been attributed to the Reed-Sparrow, and perhaps there may yet be writers so ill-informed as to continue the mistake. The hurried, varied and chattering notes of both those Warblers can never be for a moment confounded with the simple strain of this Bunting by any one who has heard the latter, and in like manner though its nest be occasionally composed of the same materials as that of the Reed-Wren, before figured in this work (*tom. cit.* page 375), the one can always be known by its smaller size and neater workmanship, and by its being wholly suspended between the reed-stems, while the other even when attached to the stems seems to be always supported from beneath.

The Reed-Bunting breeds in suitable localities almost everywhere throughout the British Islands, Shetland being the principal exception, since there, according to Saxby, only three examples have been observed, but these arrived in the earlier half of the year. Baikie and Heddle state that it has bred in Orkney, and Mr. Gray says that it does so in most of the Outer Hebrides, indeed, according to information communicated by Capt. Powlett-Orde, it is very common in North Uist. In Scotland generally its numbers seem to receive a large increase in winter, and probably the same is the case to some extent in England—at any rate on the east coast. In Ireland, says Thompson, it is a resident distributed over the whole island, which from the prevailing humidity is peculiarly well suited to it.

It is found in swampy ground over almost the whole of continental Europe from the neighbourhood of the North Cape to the Straits of Gibraltar, and apparently in all the principal islands of the Mediterranean as far as Crete. It occurs too in the neighbourhood of Tangier, and, according to Loche, inhabits all three of the provinces of Algeria, but from the silence on the subject of several other observers in that country it would seem not to be plentiful there, and it is not to be traced further to the eastward in Africa. As to the determination of its range in Asia great difficulty at present exists, for there is certainly a second, if not a third, form of Reed-Bunting found in many parts of Siberia, and the Russian ornithologists do not agree with regard to the rank to be assigned to either or both. It would seem, however, that a form quite indistinguishable from our own occurs throughout the south-western portion of the Russian dominions in Asia, and that this was also found by Dr. Severzov in Turkestan. Mr. Hume too (Ibis, 1869, p. 355) has obtained it from near Badlee, some thirty miles to the south of Delhi, and the identity of the species with the European bird was subsequently confirmed by the late M. Jules Verreaux, though the Reed-Bunting had been hitherto unknown in India.

The bill is dusky brown above, paler beneath: irides hazel: the adult male in breeding-plumage has the whole of the head jet-black, bounded by a white collar, which descends to the breast; from near the corner of the gape a white stripe passes backwards below the ear-coverts and joins a broad white nuchal collar, which is succeeded by a narrow band of iron-grey and dull black; back and wing-coverts deep brownish-black, each feather broadly bordered with bright bay and ochreous, the former so predominating on the upper wing-coverts that they seem to be wholly of that colour; the wing-quills dark brown, the primaries with a narrow margin of ochreous-white, but that of the secondaries and tertials, especially the latter, broader and redder as the inner part of the wing is approached; the rump and upper tail-coverts brownish-black mixed with iron-grey; the tail-quills dark brown; the middle pair somewhat lighter than the rest and with broad light edges, the two outer pairs margined exteriorly with white and having a large white patch on the inner web; chin and throat black, which at first widens out under the white collar and then forms a pointed gorget ending on the upper part of the breast; all the rest of the lower plumage white, which is pure on the sides of the breast, belly and lower tail-coverts, but clouded and streaked with brown on the sides of the body, flanks and tibiæ: legs, toes and claws, brown.

The adult male in autumn and winter has all the feathers of the upper parts so broadly bordered with light reddish-brown that the darker tints are greatly if not altogether obscured. The same is the case on the chin and throat, so that the bird seems to have a brown head, only here and there mottled with black. In the spring these light edges fall off and leave the head and throat of a pure black.

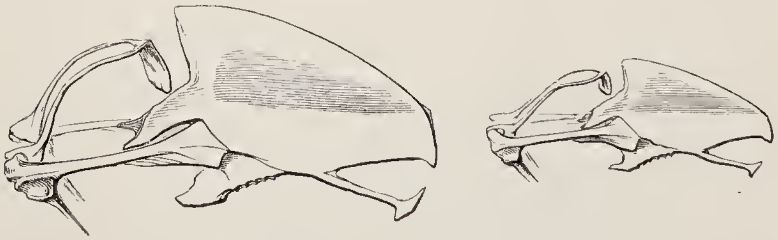
The whole length of the male is six inches. From the carpal joint to the end of the wing, three inches: the third, fourth and fifth primaries nearly equal in length, and considerably longer than the second, which again is a little longer than the sixth.

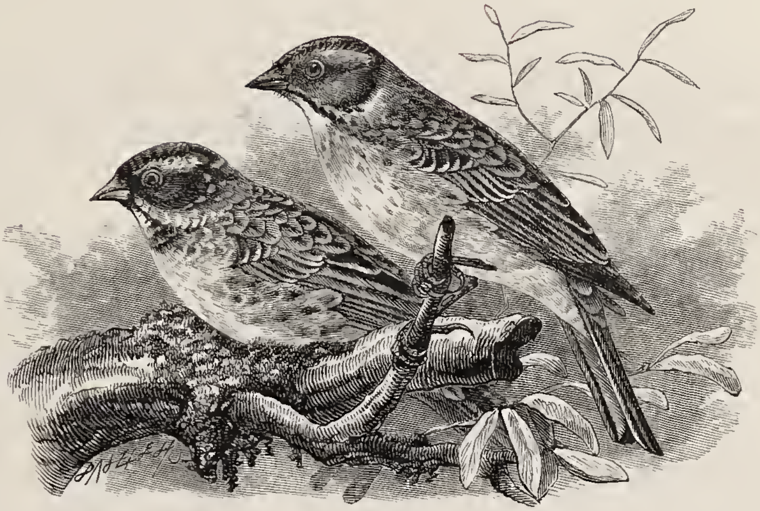
The female is rather smaller than the male, and has the upper part of the head and ear-coverts dark brown, the feathers being bordered with light reddish-brown; the lores and a stripe over and behind the ear-coverts, pale yellowish-brown; the back and wings almost as in the male; the chin and lower parts dull white with an interrupted streak of dark brown descending from each lower corner of the mandible; the feathers of the chest dark brown along the shaft, becoming light reddish-brown on each web, and bordered with dull white, so as to present a distinct and broad spotted gorget.

Young birds in autumn and winter have the bill dusky horn-colour, the lower mandible yellowish; the plumage generally resembles that of the female, but the light-coloured borders of the feathers are so long as to conceal nearly all the darker part, and while those of the crown of the head, the nape and back are edged with ochreous-grey, those of a stripe on each side of the vertex, and of the wing-coverts, tertials and inner secondaries are more rufous; the line immediately over the eye, and the front and sides of the neck are pale ochreous, but the ear-coverts and the streak from the lower corner of the mandible are distinctly marked with dark brown; the pectoral gorget is ill-defined, and the longitudinal streaks which mark it are continued along the sides of the body and flanks. Young males seem to acquire the black head in the spring following their first winter.

It was proposed by Friedrich Boie (Isis, 1826, p. 974) to separate this species from the genus *Emberiza*, but whatever reason he might have had for so doing he gave none, and it seems to the Editor that none which can be deemed sufficient is assignable. Nevertheless Boie's proposed genus *Cynchramus* has been adopted by several writers.

The vignette below represents the breast-bones of the great Bunting, to be presently described, and the Reed-Bunting.





EMBERIZA RUSTICA, Pallas*.

THE RUSTIC BUNTING.

NEWS of the first and hitherto the only known occurrence in England of the beautiful Bunting above figured was communicated to 'The Ibis' for 1869 (p. 128) by Mr. Gould in a letter dated December 30th, 1868. The specimen, which is now in the collection of Mr. Monk, was caught near Brighton, October 23rd, 1867, and shewn while alive to Mr. Rowley. Its portrait has been given by Mr. Gould in his 'Birds of Great Britain.'

The proper home of this species is the north-eastern part of Europe and the most northern part of Siberia. Pallas originally described it as arriving in March in the willow-beds of Dauuria, afterwards adding that it is abundant along the rivers of Transbaikalia, where it sits on the ground and trees singing with a voice not unlike that of the Reed-Bunting. Steller observed it in Kamchatka, as Kittlitz subsequently did. Nearer to us it was shot at Haparanda, May 20th, 1821, and the specimens so obtained were described as a new species, under the name of *Emberiza borealis* by Zetterstedt (Resa genom Sveriges och Norriges Lappmarker, 1822, i. p. 107), who was not aware of Pallas's prior discovery; but Prof. Nilsson, who had previously met with the bird and thought it to be a variety of *E. schœniclus*, a few years later conclusively identified the two supposed species. Zetterstedt during a second journey (Resa genom Umeå Lappmarker, 1833) believed he had met with it in various places in Umeå and Lycksele Lappmark, but there is reason to suppose him mistaken; for, though Schrader states (Journ. für Orn. 1853, p. 256) that he found it breeding in Lapland, it never revealed itself to the keen scrutiny of Wolley, Pastor Sommerfelt or Herr Nordvi, and it must be regarded as a mere straggler to that country. Nevertheless a little further to eastward it would seem to be a regular summer-visitant, and Dr. Malmgren has kindly informed the Editor that it breeds every year near Kajana in Finland, in which country it had before been observed by Johann von Wright and Arthur von Nordmann. In the neighbourhood of Archangel also it annually appears and doubtless breeds. The naturalists to whom we owe nearly all our knowledge of the ornithology of Northern and Eastern Siberia—Drs. von Middendorff, von Schrenck and Radde—never found it breeding in the parts of the country which they explored, though they corroborated the statement of Pallas by observing it as a regular bird-of-passage in various localities. Mr. Swinhoe has met with it in North China;* and it has long since been recorded as a visitor, at least, in Japan.

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* Reisen durch verschiedene Provinzen des Russischen Reichs, iii. p. 698 (1776).

As a straggler in autumn or winter it has occurred several times in Southern Sweden, and occasionally in Germany from Altenburg to Austria. Mr. Gätke has obtained it at least four times in Heligoland, and it extends its wanderings not unfrequently to the South of France and Northern Italy. Naturalists have long hesitated whether the *Mitilene de Provence*, figured in the 'Planches Enluminées' (656, fig. 2*), was not this species, and to judge from the plate so it was; but the belief of De Montbeillard and some others in its being a native of the countries bordering on the Mediterranean is assuredly an error. It was said by Temminck to occur in the Crimea, but this is probably one of the random assertions to which he was prone, and the authority on which it was made is not stated.

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* In one of his numerous and valuable contributions to Chinese ornithology (Ibis, 1861, p. 255) he stated that this species had occurred to him in Talien Bay, in June or July, 1860, but herein he was, as he has subsequently informed the Editor, in error, having mistaken another species for it.

Of the habits of this bird little has been recorded. They would seem on the whole not to differ much from those of the Reed-Bunting; but Messrs. Alston and Harvie Brown state that the specimens they procured near Archangel were found in marshy pine-woods and in openings in the forest—places which would hardly be frequented by that species. They add that its call-note resembles that of its congener; but other observers have likened the sound to that produced by very different birds—the Redwing and Redbreast for example. Disregarding, for the reasons before assigned, the account given by Schrader, nothing seems to be positively known as to its nidification. An egg professedly belonging to this bird, in the possession of the Editor, measures ·84 by ·6 in. and is of a pale greenish-white, patched with dull ash-colour and streaked and spotted with dark olive—much resembling certain varieties of those which the Lapland Bunting occasionally lays.

Few of the Buntings bear confinement well, but M. Barthélemy-Lapommeraye kept an example of this species in an aviary for two years, and Mr. Keulemans, the draughtsman to whom the present edition of this work is indebted for the foregoing figures of this and some of the other species now for the first time introduced, had an example for more than eighteen months in a cage. It was a cock-bird, and was bought by him at Amsterdam in October 1868, but made its escape in England in April 1870; while in the year last mentioned a third is said to have been brought alive from Moscow to Berlin.

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* On this figure is founded the *Emberiza lesbia* of J. F. Gmelin (Syst. Nat. i. p 382).

The adult male in full summer-plumage has the bill greyish-yellow, with the upper mandible brown: the irides yellowish-brown: the lores, ear-coverts and top of the head black, with but a scanty trace of the pale median streak along the vertex which at other seasons is very conspicuous; above and behind the eye a stripe of pure white passes backwards, nearly meeting a white patch on the nape, which is immediately succeeded by a collar of bright bay descending on each side so as to encircle the throat; the back and upper wing-coverts are reddish-brown mottled with black, the feathers of the former, with the scapulars, being black near the shaft edged with bright bay and then more or less broadly bordered with buff; the middle and lower wing-coverts brownish-black with lighter borders and white tips, forming two well-marked bars across the wing; quills dark brown with lighter edges, the two outer tail-quills on each side having an oblique white patch; rump and upper tail-coverts bright bay, the feathers bordered with buff; chin black next to the bill, and, in some specimens, with an interrupted black line extending downwards on each side from the lower corner of the mandible, the rest of the chin and throat white, as is the whole of the lower surface beneath the bay collar, which sometimes passes into deep brown on the median line and always forms a more or less well-defined band across the upper part of the breast; the sides of the body and flanks broadly streaked with bright bay: legs and toes flesh-coloured, claws somewhat darker.

In winter the same bird has the feathers generally broadly bordered with buff, so as almost entirely to conceal the deeper tints of the plumage, and, in many examples, even at the breeding-season, these borders not being entirely shed, especially from the top of the head, give the bird a very different appearance, but the characteristic colouring may always be discovered by examining the middle part of the feathers.

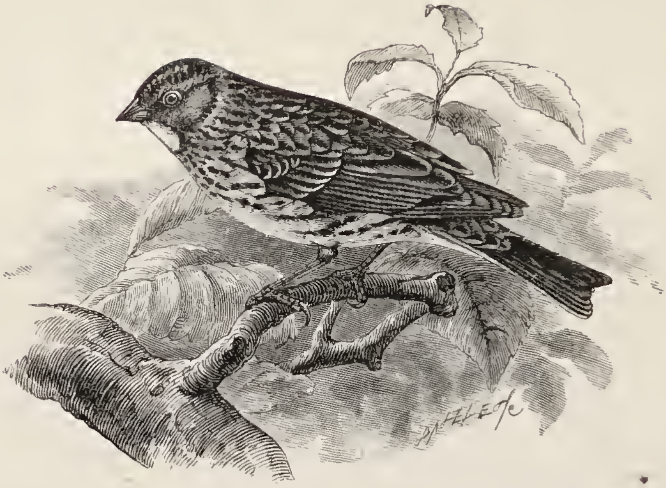
The adult female in summer has the bill yellow: the top of the head and ear-coverts brown, mottled with dark brown and buff; the lores, vertical streak, superciliary stripe and nuchal patch ochreous-white; the bay collar narrower and duller than in the male, and the warmer tints of the whole plumage fainter except on the rump, where the bay is as bright as in the other sex.

The young in autumn greatly resemble those of the Reed-Bunting at the same season, but the tone of plumage generally is yellower, the nuchal spot is distinct, and the bay of the collar, sides of the body and the rump, even when partly concealed by the ochreous borders of the feathers, can always be detected.

The nestling plumage resembles that of the old hen in the breeding-season, but the reddish tints are less bright above and entirely wanting beneath, while the whole of the lower parts from the chin to the vent is thickly streaked or spotted with dull black.

The specimen in full summer-plumage here described is in the Strickland Collection of the University of Cambridge. The other examples were kindly lent to the Editor by Mr. Dresser.

PASSERES. *EMBERIZIDÆ.*



Emberiza pusilla, Pallas*.

THE LITTLE BUNTING.

At a meeting of the Zoological Society of London on November 8th, 1864, Mr. Gould exhibited a specimen of this species, previously unknown to Britain, which he said had been lately taken in a clap-net near Brighton (Proc. Zool. Soc. 1864, p. 377). Soon afterwards Mr. Rowley furnished (Ibis, 1865, p. 113) some additional particulars of its capture, which took place on the 2nd of the month named, and, from his examination of the living bird, not only identified the species to which it belonged, but concluded that it had not escaped from captivity. This specimen has since passed into the possession of Mr. Monk.

While like the species last described a native of the northern parts of Eastern Europe and of Asia, this small Bunting seems to be far commoner and perhaps to have a somewhat wider range in its autumnal wanderings than *Emberiza rustica*, as well as to be a regular instead of an occasional visitor to certain localities in Western Europe, though it has doubtless been often overlooked in others. A hen-bird is recorded by Prof. Nilsson as having been shot near Lund in April, 1815, but there is no mention of the subsequent occurrence of the species in Sweden, nor of its appearance in Finland, Norway, or Denmark. Yet in Heligoland Mr. Gätke meets with one or two examples in September or October of almost every year, and, according to Prof. Schlegel, a hen was taken near Leyden, 18th November, 1842. Mr. Keulemans has informed the writer of three other examples in Holland:—the first was bought at Rotterdam in September 1862, and, after living about three months in confinement, is now in the Museum of Leyden: the second was caught by Mr. Keulemans himself in October 1862, and the third was found by him in a cage, but the owner refused to part with it. In the autumn of 1874, Mr. Labouchere caught another near Harlem. Still in Germany it is only reported from East Prussia, and it has not been observed in Belgium or Northern France. In the South, however, of the country last named it is said by M. Jaubert to be the commonest of the rarer Buntings which annually congregate about Marseilles, and several examples have been taken in Northern Italy, where they seem for some time to have passed under the name of *E. durazzii*, which is now generally though not universally regarded as a synonym of *E. pusilla*. A pair were obtained near Vienna in 1850 by Herr Zelebor and are preserved in the Museum there. It is included by Messrs. Elwes and Buckley as a rather rare winter-visitor on the Bosphorus. Writers on European ornithology were slow to admit this species to a place in their works, and it was not until Prof. Schlegel had recorded its occurrence in Holland, as above stated, that it was recognized as a denizen of this quarter of the globe, yet it has been found to be not unfrequent by all observers of birds who have visited the north of Russia—Prof. Lilljeborg, Herr Meves and Messrs. Alston, Harvie Brown and Seebohm. Near Archangel, say the two first of our countrymen, it is " a very common species, but apparently somewhat locally distributed. It frequents both pine-woods of large growth and thickets of underwood, but seems to prefer young woods with a mixture of pine, fir, alder, and birch. We often heard their sweet low song, more resembling the warbling of some *Sylvia* than of an *Emberiza*, which was generally poured forth from the top of a tree; they had also a low cry of alarm, which may be expressed by the words ‘tick, tick, tick’ repeated at intervals of about a second. We did not find any nests, but obtained the young in several stages.”

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* Reisen durch verschiedene Provinzen des Russischen Reichs, iii. p. 697 (1776).

Pallas, who in Dauuria discovered this species, described it as being common about the mountain-torrents and in the higher larch-woods of that country, subsequently adding willow-beds to these localities. It is there migratory but often killed by the cold. In spring it eats beetles of the family *Tenebrionidæ*. His successors in the exploration of Eastern Siberia have amplified his observations. Dr. von Middendorff found it breeding on the Boganida, where, however, it was very rare and he only obtained two of its nests from which he figures three eggs. He also observed it on passage on the shore of the Sea of Ochotsk. Dr. von Schrenck found a nest on the Lower Amoor in the opening of a fir-forest. This contained five eggs, was placed on the ground between the tussocks of a swamp, and was artlessly built of grass-stalks and larch-leaves. Prof. Radde, in the south of Eastern Siberia, obtained nearly a score of specimens, including the young and old of both sexes, but as a breeding bird it seemed to him to be rare and segregated. It was late to arrive and late to depart. In the north of China Mr. Swinhoe says it is abundant, spreading southward in winter. At the same season it is found over the whole extent of the Himalayas, and would seem occasionally to wander into the plains of India during the cold weather, for Jerdon who had already procured it at Darjeeling afterwards shot one near Kolassee in the Purneah district. Mr. Hodgson obtained it in Nepaul, and Prof. Adams in the North-west Provinces.

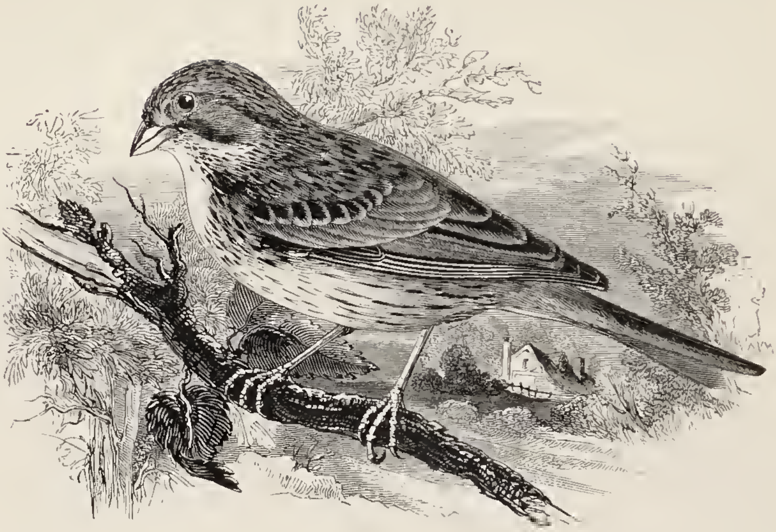
The eggs are figured by Dr. von Middendorff as having an ochreous-white ground, blotched and spotted with reddish-brown and black, and measuring from ·88 to ·7 by from ·58 to ·53 in. A specimen in the writer's possession from Archangel, and attributed to this species, is coloured like a normal egg of the Lapland Bunting, and measures ·71 by ·57 in.

The adult male in breeding plumage has the bill dark brown with the lower mandible lighter: the sides of the head, lower portion of the ear-coverts and a median streak along the top of the head, dull chestnut; on each side of this streak is a broader stripe of deep black, which then passes downward behind the ear-coverts and encloses a small patch of buffy-white; the sides of the neck are dull white almost forming a collar, but interrupted on the nape, the feathers of which with those of the mantle, back, rump and upper wing-coverts are dark brown, bordered with light brown and chestnut; the middle and greater wing-coverts dark brown, bordered with greyish-white and tipped with light buff, forming two light bars across the wing; wing- and tail-quills dark brown with narrow light brown edges, except the two outer tail-quills which have each an elongated white patch on the inner web; chin light chestnut becoming paler on the throat which is dull white; breast, belly and lower parts generally dull white with spots or streaks of dark brown forming a band across the chest continued along the sides of the body and flanks: legs, toes and claws, dark brown.

The bill in this species has scarcely a trace of the palatal knob. The whole length is about five inches; from the carpal joint to the tip of the wing two inches and three-quarters.

The female much resembles the male, but the chestnut of the head is less bright, and the stripes on the same part broader and dark brown instead of black; the chin and throat are only tinged with chestnut and the pectoral band is less strongly marked.

The young in autumn is very like the adult female, but the broad stripes on the head are less well defined, the margins of all the feathers above are more rufous and there is a decidedly rufous tinge on all the lower parts from the chin to the vent.



Emberiza miliaria, Linnæus*.

THE BUNTING.

Emberiza miliaria.

The Bunting or Common Bunting, as most English writers for nearly a century have called it—though it is by no means the commonest or the best-known of the group of birds named from it—is yet of frequent occurrence in nearly all the cultivated districts of this country, and remains here throughout the year. Being most usually observed upon arable land and especially in corn-fields, it has obtained in many parts of the kingdom the distinguishing epithet of Corn-Bunting, while in others it is only known as the Bunting-Lark. It is perhaps most numerous in the southern counties of England, but, as will presently be seen, it is also found in the extreme north and west of our islands. During spring and especially summer, this bird, the largest of the

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* Syst. Nat. Ed. 12, i. p. 308 (1766).

Buntings, and remarkable for the clumsiness of its figure, may be often seen perched by the roadside on one of the upper branches of a hedge, or on a tall weed, where it utters its droning, harsh and unmusical song, which is sometimes continued as it flies from spray to spray or lazily glides with hanging legs a short distance over the adjoining field. Though said by some authors to finish its nest about the middle or towards the end of April, in most districts it is certainly one of the latest birds to begin the business of nidification, and it seldom has eggs before the middle of May, while the time that they may be generally looked for is perhaps a month later. The nest is usually placed on or very near the ground, in a field of pease or red clover, among the stalks of which it is generally built, though it may be also found concealed in any coarse herbage or tangled briars. It is composed of straw and fibrous roots, mixed with some dry grass, and is lined with finer blades of the last material with the occasional addition of a few horsehairs. The eggs are from four to six in number, of a dull purplish-white, but often tinged with ochreous, sometimes so much so as to be altogether clay-coloured, with patches of dull lavender, specks, streaks and blotches of deep dark brown, almost black, as are some irregular lines; the blotches are sometimes sharp and well-defined, but nearly always part at least of their edges are blurred: the eggs measure from 1·04 to ·9 by from ·74 to ·65 in.

The adults feed principally on seeds and grain, for the breaking or shelling of which the palatal knob and the elevated cutting edges of the lower mandible would seem to be admirably adapted; but it is stated by Macgillivray and some others that the Buntings swallow their food unpeeled, while Naumann on the other hand asserts the contrary. The young while nestlings are probably fed with insects, and Mr. Gould mentions having seen the adults feeding on the common cockchafer.

Though living in pairs during the spring and summer, this species becomes gregarious through autumn and winter, associating in flocks with Chaffinches, Sparrows and other visitors to the farm-yard and barn-door for the sake of the grain to be there obtained. Knapp in his 'Journal of a Naturalist' has described a case of serious injury done by this bird, having witnessed a barley-rick, standing in a detached field, entirely stripped of its thatch, which the Bunting had effected by seizing the end of the straw, and deliberately drawing it out, for the sake of any grain the ear might yet contain. That this is a common habit may well be doubted, and when indulged in the mischief is generally slight, for, as Mr. Cecil Smith remarks, in a well-built stack the straws are too closely and firmly packed to be pulled out without breaking; but where the farmer is careless and the stacks are loosely put together, as Saxby observes is the case in Shetland, great damage may thus ensue.

This bird is said to roost generally in thick bushes, particularly during the cold nights of winter; but many of them also pass the night on the ground in stubble-fields, and being caught with Skylarks in the nets employed for that purpose, are brought with them to market for the use of the table.

The Bunting is to be found in suitable localities throughout Great Britain, but, though less common in Scotland than in England, it reaches and breeds in the Outer Hebrides—extending even to St. Kilda—in Orkney and Shetland. Mr. Gray considers it less local in the west of Scotland than in the east, and has observed its preference for the westerly sides of islands, as in North Uist and Benbecula, where it is known by the name of "Sparrow." As first noticed by Jardine many years ago, the numbers of this species receive a considerable addition at the time of the great general migration in autumn or the beginning of winter, and specimens obtained out of these flocks of foreign extraction, which in Scotland do not appear to come further south than Angus, are said to be larger and more thickly-feathered than our native examples. In a less degree a like immigration is observable on the east coast of England, in Lincolnshire and Norfolk, but it does not seem to have been so commonly remarked that at the same season the species almost totally disappears from certain other localities, where in spring and summer it is not uncommon, thus proving that even our homebred birds are subject to the migratory movement. In Ireland it is found throughout the island and is a permanent resident, but even there Mr. Garrett, as quoted by Thompson, inclines to the belief that it exhibits the same tendency, to which indeed the long-observed habit of the species, as before stated, to become gregarious in winter is but a prelude.

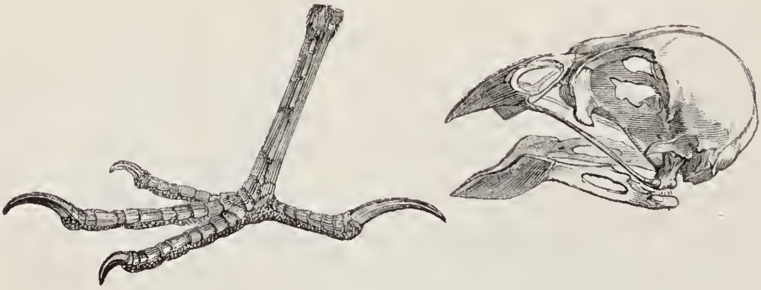
In Norway this bird is found but in one locality, the Jæderen reef, which it would seem to have colonized from the not very distant coast of Jutland. In Sweden it is almost confined to the extreme south, being rare even near Gottenburg, but it inhabits Œland, though it does not seem to reach Finland. On the southern shore of the Baltic it is very common in Denmark and so continues at least as far as Livonia. In Russia its most northern range cannot be given, but though local, it appears to be numerous in certain districts, especially towards the south. It does not penetrate to Siberia, but Dr. Dode procured it in Turkestan and De Filippi found it in all the cultivated parts of Persia. Abbott obtained it many years ago at Trebizond, and Canon Tristram says it is resident in Palestine and as common there as the Skylark is in England. In winter it visits Arabia Petræa and Egypt, extending its range to Nubia, where however it is less often seen. Jardine had a specimen from Tunis, and it is abundant in Algeria and Morocco. Dr. Bolle found it common in the Canaries. In Portugal it would seem to be local, but in certain districts plentiful, as it is also in Southern Spain. Throughout the rest of Europe it is more or less generally dispersed, its distribution apparently depending chiefly on the fitness of the district for the growth of corn.

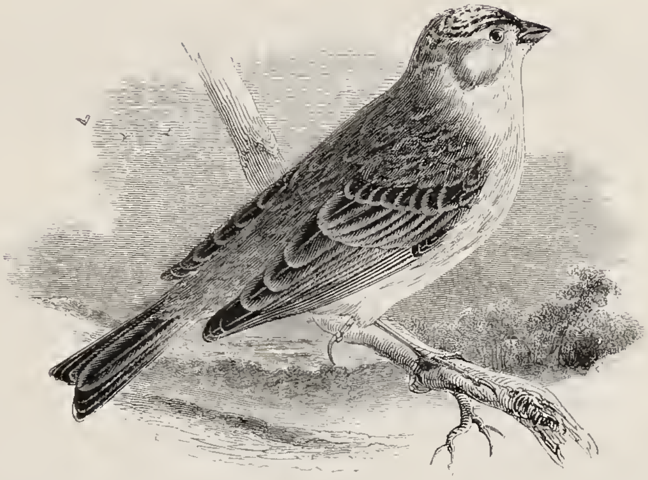
The upper mandible has a dark brown stripe along the culmen, the remainder and the lower mandible being pale yellow-brown: irides dark hazel: the head, neck, back and upper tail-coverts, pale hair-brown, streaked longitudinally with dark brown, the dark line occupying the middle of each feather; the wing-coverts and tertials dark brown, broadly margined with pale wood-brown; wing- and tail-quills dark brown, with lighter edges; chin, throat, breast and lower parts of the body, dull whitish-brown, marked on the sides of the neck and on the breast with arrow-headed spots of dark brown; the flanks streaked with dark brown: legs, toes and claws, pale yellow brown.

The whole length is rather more than seven inches. From the carpal joint to the end of the wing, three inches and three-quarters: the fourth primary the longest in the wing; the fifth a little shorter than the second.

There is very little difference in the plumage of the sexes; but some examples are deeply tinged with yellow, while British specimens are usually much darker in colour than those of the Continent, some of which, especially from eastern localities, are very pale in hue. The young greatly resemble the adults, but some difference of opinion has been expressed as to whether they are in their first plumage lighter or darker than their parents.

The figures below represent the foot and skull of the Bunting, in the latter of which may be seen the palatal knob on the upper mandible, and the opposed cutting angle of the lower jaw, characteristic of most of the true Buntings.





EMBERIZA CITRINELLA, Linnæus*.

THE YELLOW BUNTING.

Emberiza citrinella.

THIS handsome bird is one of our commonest species, and is conspicuous, in summer particularly, by frequenting almost every hedge-row or furzy common, flying from one low tree to another, or from bush to bush, in front of the by-passer. The brilliancy of the cock's plumage might claim for the Yellow Hammer†, to use its best-known name, much greater distinction were it not everywhere so common; and his song also, though doubtless heard with rapture by his mate, is indifferent, consisting chiefly of one note repeated five or six times in quick succession, followed by two others, the last of which is drawn out to a considerable length. Yet one cannot deny that this strain, repeated as it is, with but short intermissions, for half an hour together from the same perch, is in strict keeping with the languors of a summer's day, and, protracted to a season when nearly all other birds are silent, it inspires the human listener with interest in the performer.* No species continues its song so late in the year or so indefatigably during the heat of a cloudless day, and thus in the mind of nearly all lovers of the country the notes of the Yellow Hammer are associated with calm, bright weather, and wherever heard recal memories of sultry July or August afternoons when hardly another sound breaks the silence of the fields save the chirping of grasshoppers, and the wayfarer gladly seeks the welcome shade of a solitary tree or bush to screen him from the scorching glare of the sun.

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* Syst. Nat. Ed. 12, i. p. 309 (1766).

† In former Editions of this work the Author strove to restore what he believed to have been the first English name of this bird—Yellow Ammer. As might be expected in such a case, custom, whether right or wrong, would not give way to the proposed amendment, and Yellow Hammer, with its abbreviation Yellow Ham, have been commonly printed from the days of Turner (1544) and Merrett (1667) to the present time. There can indeed be no question of "Hammer" (in this sense) being strictly cognate with the German *Ammer*, but it would seem that prefixing the letter H to the word is not wholly an English peculiarity, since there is some ground for believing that *Hammer*, which now survives in *Hämmerling*, was equally with *Ammer* a Teutonic form. Another early spelling of this word in both languages was "Amber," used in 1668 by Charleton (Onoma-

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sticon Zooicon, p. 80) and by Ray in 1674 (Coll. Engl. Words, &c., p. 88). Perhaps the parent form was the old German *Embritz*, whence comes the Latinized modification *Emberiza*, spelt by some ancient authors *Embriza*. Mr. Skeat, in a communication kindly made on this point to the Editor, remarks that the letter *h* is seldom wrongly prefixed, and cites among the few examples of the practice "hermit," "horde" and "humbles"—the roots of which are probably *eremita*, *ordu* and *umbilicus* respectively. Mr. J. W. Cartmell has added to these words "hogshead," which ought to have been "oxhead," from the Dutch *ochshood*, and "howlet" instead of "owlet"—the last being almost an exact parallel to "Hammer" in the present bird's name. Dr. Robert Latham's assertion (Dict. Engl. Lang. ii. p. 1432) that "the derivation is the A.S. *hama*=skin, clothing, covering" seems to be wholly unsupported by evidence.

* The character of the Yellow Hammer's song has naturally led to its being often syllabled, and in England one rendering of it, which has several local variations, is "Little bit o' bread and no cheese." In Scotland no such humorous version is current, and there its interpretation, according to Macgillivray, is "Deil, deil, deil tak ye" (*i.e.*, ye who would rob the nest). This form of imprecation seems to be connected in the mind of North Britons with a strange superstition that the Yellow Yoldring, as they most frequently call the bird, is on very familiar terms with the Evil One, who is supposed on a May morning to supply it among other odd dainties with half a drop of his own blood, the effect of which is somehow to produce the curious markings on its eggs to be presently described.

Under such circumstances the Yellow Hammer's drowsy strain is far from inharmonious. But it is not only at this period of the year that his song is heard. Towards the end of January or early in February almost any gleam of sunshine will awaken his vocal powers, and as he sits aloft to catch its first or last rays his simple melody attracts the ear until with advancing spring it is drowned in the full burst of song.

The Yellow Bunting is generally a late breeder, seldom laying its eggs till the middle of April, while they have been found unhatched even in September (Zool. s.s. p. 1132). The nest is most frequently placed upon or very near the ground, sheltered by a bush, in a hedge-bottom or on the side of a grass-grown bank; and the moss, roots and hair of which it is composed are usually well put together. Exceptions to all these points however occasionally happen. Mr. Blackwall, many years since, noticed (Zool. Journ. v. p. 12) the fact, which came under his own observation, of a hen-bird of this species laying her eggs on the bare ground, in which situation she sat upon them till they were hatched; and Salmon mentions (Nat. ii. p. 274) his having found a nest, in 1834, at the extraordinary elevation of seven feet from the ground, placed among the branches of a broom-plant, which, though naked at the bottom, had a close, thick head.

The eggs are of a pale purplish-white, streaked or veined with very dark irregular lines of reddish-purple, almost black, in addition to which there are often a few spots of the same, which occasionally are greatly diffused over the whole surface, and the eggs may then be said to be clouded with dull reddish-purple: some patches of lavender are also at times present. The eggs measure from ·96 to ·74 by from ·68 to ·58 in. The male is remarkable for his attentions to his mate, and has been said to take his turn upon the eggs during the period of incubation; while Neville Wood mentions having heard him sing when thus engaged. The young are generally ready to leave the nest within a fortnight after the time of being hatched; but if often visited before they are able to fly, their fears induce them to quit their discovered retreat a few days sooner. They are fed mainly if not entirely on insects, which in summer seem to form the chief sustenance of the adults *; but as autumn approaches they do great service to the agriculturist by consuming the seeds of many noxious weeds, those of the various species of *Arenaria*, *Stellaria* and *Polygonum* in particular. In winter this species is gregarious, flocking with Chaffinches, Greenfinches and other birds, to stack-yards, and at that season it will readily feed on grain, though smaller seeds, which slovenly husbandmen have so often to carry home with the corn, are nearly always the object of its especial search. Sometimes the Yellow Hammer, like the Bunting, will pass the night on the ground; but in very cold weather the shelter of thick bushes and evergreen shrubs forms its favourite resort at roosting time. In Italy great numbers of this species are caught, with Ortolans, and fattened for the purpose of the table.

Of the countries inhabited by the Yellow Bunting, it may be sufficient to say that it is a common resident throughout most parts of Great Britain, in the eastern counties regularly receiving an addition to its numbers towards winter, and is even found in the Outer Hebrides. It has been known to breed in Orkney, though not in Shetland, but in the latter it is often seen, and in both groups of islands it most frequently appears in winter. In Ireland it is common in suitable localities, and, according to Thompson, is resident. It is hitherto unrecorded from the Færoes or Iceland, but in continental Scandinavia it occurs, and is by no means rare, so far to the northward as the Alten valley, and it has been seen with its young, by Pastor Sommerfelt, on the Tana. But in these high latitudes it would appear to be chiefly an autumn-visitor, and though its nest has several times been found in the Muonioniska district, Wolley was satisfied that the majority of examples observed and obtained by him came from the eastward towards the end of summer. At that season it is very common in the interior of Finland, and it even winters, according to Dr. Malmgren, at Kajana. It is found abundantly near Archangel, and is more generally distributed than any of its congeners on the islands and coasts of the White Sea. About Lake Ladoga also it is resident. In Western Siberia it would seem to be common, though to a great extent migratory, yet Prof. Radde found that it came to the Jenesei in winter, and especially observed it near Krasnoiarsk, in November. Prof. Brandt names it as occurring in the Eastern Altai. According to Dr. Severzov it appears, but rarely, on the river Daria in Turkestan in winter. De Filippi did not meet with it in Persia: it is included among the birds of the Caucasus, and Messrs. Dickson and Ross procured it at Erzeroom in spring. At Constantinople it is said to be very numerous in winter, but it is not recorded from Greece, Palestine or Egypt. It is found throughout Italy, but it seems to breed only in the northern uplands and is scarce in the south as well as in Sicily and Sardinia. It does not even breed in the south of France, and though said by Loche to do so in Algeria no example seems to have occurred to any other ornithologist in that country. Col. Irby says that he has neither seen nor heard of it on either shore of the Straits of Gibraltar, but according to MM. Webb and Berthelot it inhabits Teneriffe: Mr. Godman however did not meet with it on any of the Atlantic Islands. Its appearance in Portugal has not yet been substantiated, and in Spain its distribution seems to be limited, while in the southern parts of that country it is said to be only an occasional winter-visitor. Within the boundaries thus vaguely drawn, however, it is almost everywhere a common and, from its bright plumage and confident habits, a well-known bird, as testified by the very large number of local names which it enjoys throughout Europe.

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* On one occasion the Editor observed an old bird of this species busily engaged with a large *Sphinx* which was more than it could master, and on his approach it left its prey mangled in the road; but generally insects of a more manageable size are undoubtedly preferred.

The adult male in summer has the upper mandible (which bears a well-developed palatal knob) brown, the lower mandible of a bluish horn-colour: the irides dark brown: the head, and a patch on the nape, bright gamboge-yellow, varied with dusky streaks on the forehead and lores, behind the crown and on the boundary of the ear-coverts; mantle and sides of the neck, olive tinged with orange; upper part of the back and wings dark brown, each feather broadly edged with brownish-orange; primaries dusky black, with narrow outer edges of bright yellow; secondaries, tertials and wing-coverts, dusky black, broadly margined with rich chestnut-brown; upper tail-coverts chestnut, edged with yellow; tail dusky black, the middle quills broadly bordered with chestnut and the rest narrowly edged with yellow, the two outer pairs (which are slightly shorter than those next to them) having also an elongated white patch on the inner web; the chin and throat bright gamboge-yellow with an almost continuous line of dusky chestnut descending on each side from the lower corner of the mandible; breast and flanks clouded and longitudinally streaked with chestnut, which on the latter passes into dark brown; the rest of the lower parts bright gamboge-yellow, except the lower surface of the quills which is grey: legs, toes and claws light brown.

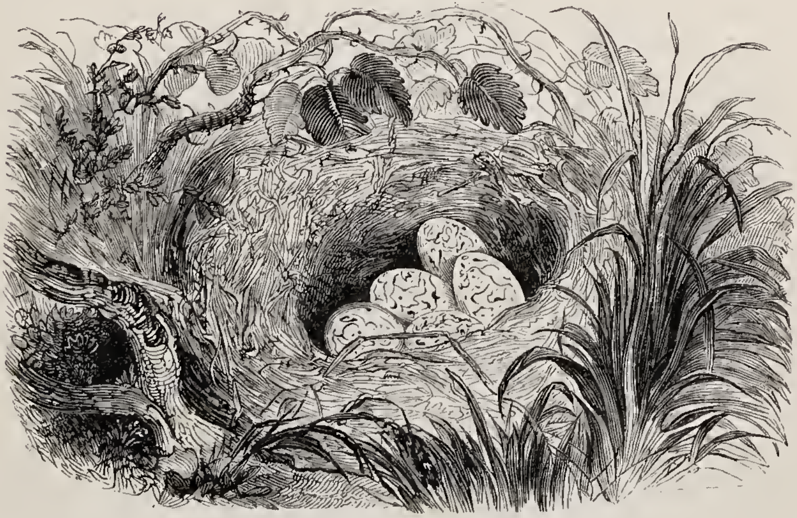
In winter the bright yellow, especially on the head, is much obscured by dusky mottlings; but at all times of the year the males are subject to much variation in the brilliancy and purity of their tints. In some examples the head is of a straw or primrose colour, while in others, especially from the south of Europe, the hue increases in intensity so as to become almost orange. It has seemed to the Editor that Dorsetshire specimens are more brightly coloured than any others he has observed in the British Islands.

The whole length of the bird is seven inches. From the carpal joint to the end of the wing, three inches and a half; the second, third, fourth and fifth primaries nearly equal in length, but the fourth rather the longest, while the sixth is a quarter of an inch shorter than the fifth.

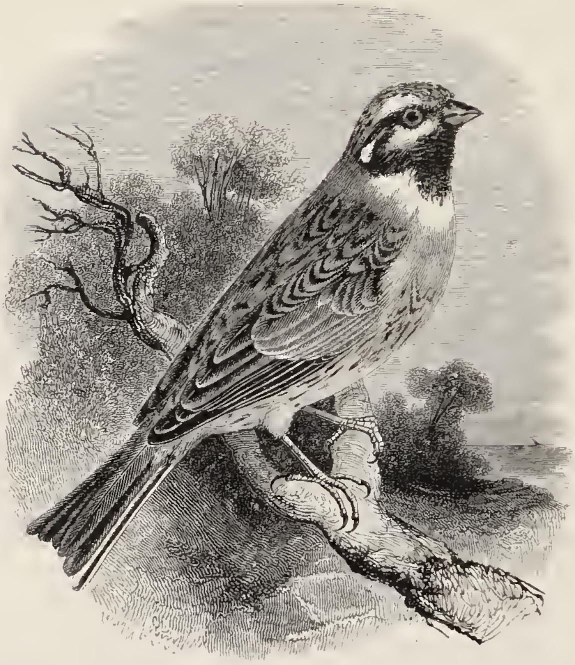
The female is much less yellow than the male, and the yellow is of a paler hue; her head, throat and breast are much more mottled, and her colours generally are much less vivid.

The young have no yellow on the head till after their first autumn-moult, and the prevailing colour of the upper parts is a dull olive streaked with dusky black, the small wing-coverts and tertials together with some of the feathers of the back being also tipped with greyish-white. After their first moult the males have the yellow much mixed with dusky spots: the bright yellow in very old males appears to extend over a larger surface than in those which are younger.

As remarked by Macgillivray of this species, and the observation seems to hold good with all the European members of the family *Emberizidæ*, the changes which take place in the plumage during winter and spring are due to the wearing off of the long margins of the feathers and to the fading of their brighter colours. He goes on to deny the generally-received opinion that birds assume richer tints in the breeding-season, but though literally he may be right as regards the species of the present group and some others, he is only so when we limit the meaning of his words to its strictest bounds. The rich tints are indeed there, but they are obscured by the overlapping of the dull-coloured margins of the feathers, and it is not until these margins are shed that the full beauty of the bright hues is revealed.



PASSERES. EMBERIZIDÆ.



EMBERIZA CIRLUS, Linnæus*.

THE CIRL-BUNTING.

Emberiza cirlus.

ALTHOUGH this bird was thought by Montagu, who first added its name to the British catalogue, to be restricted to our most westerly counties—Somerset, Devon and Cornwall, it has since been found to possess a much wider range throughout the south of England. It was discovered by him near Kingsbridge in the winter of 1800, among flocks of Yellow Buntings and Chaffinches, from which he obtained several specimens of both sexes, as almost simultaneously recorded by himself and Latham. In the following summer it was found breeding in Devonshire, and an account of the mode by which he successfully reared the young, and of their habits

* Syst. Nat. Ed 12, i. p. 311 (1766).

in confinement, was communicated to the Linnean Society by Montagu (Trans. Linn. Soc. vii. pp. 276-280).

The Cirl-Bunting is generally found near the south coast, and with us is everywhere very local. In most of its habits it resembles the Yellow Bunting, but is more shy and unobtrusive, and even where it is pretty plentiful is far less easily observed from its chiefly frequenting the tops of higher trees, particularly elms, whence the male may be heard singing, and some patience is often required to obtain a sight of the bird upon the upper branch of a tall, leafy tree. The song is tremulous and resembles that of the commoner species, but is uttered rather more quickly, and wants the long final note, so that no one once acquainted with it ought to mistake it. It is more habitually delivered in the afternoon than at any other time of the day, and is continued till the middle or end of August, or even later. The female has but a single call-note. The nest is generally composed of bents, placed in situations similar to those chosen by the Yellow Bunting, and is seldom far from the clump or row of elms which the male affects while singing. In structure it often varies, some examples being chiefly built of green moss lined with hair, while others are lined with fibrous roots. The eggs are four or five in number, of a dull white, tinged with bluish-grey, spotted, blotched and veined with dark liver-brown, almost black, the markings being mostly very well defined, and among them are generally patches of pale lavender; they measure from ·96 to ·8 by from ·67 to ·61 in. The young when hatched are supplied by the parents almost solely with grasshoppers, and the discovery of this fact ensured Montagu's success in treating those which he took from the nest. More recently several old birds were observed, near Brading in the Isle of Wight, to feed constantly on the berries of the woody nightshade, *Solanum dulcamara;* and a paste made of these, mixed with wheat, flour and fine gravel, proved excellent food for some of the young, which were reared without difficulty. Blyth in the course of some admirable notes on the habits of this bird (Nat. ii. p. 342), states that he has found the remains of beetles in its stomach, but that towards harvest-time it feeds principally on wheat. In winter, when it resorts to the stacks, though not much in company with other species, it eats almost any small seeds, and is especially, as he was informed, fond of those of sorrel. At the same season also Mr. Knox noticed its partiality for hay-seeds.

Since Montagu's discovery of this species in the south-west of England, it has been found to breed regularly along the coast of the Channel so far as Rye, but is less numerous and more local towards the east. Inland it is known to breed in the counties of Surrey, Middlesex, Buckingham, Berks, Wilts, Gloucester, Warwick, Worcester and Hereford, but in nearly all of them save Surrey and Wiltshire it would seem to be confined to a very few spots, and perhaps even in those not to breed regularly every year. Its peculiarly sporadic distribution in the breeding-season deserves far greater attention than has yet been paid thereto, and at present its preference for certain localities is wholly unaccountable. Even to guess at the cause many more precise observations than have ever been made are required. In some parts of its range it seems only to frequent the southern slopes of the Downs, or the adjoining seaboard, but then again we find it, and not so very unfrequently, a long way from such districts. There appears to be a possibility of its range having extended since the last century, for it can hardly be supposed to have occupied Selborne in Gilbert White's days without coming under his observation; yet he assuredly never noticed it, though Blyth in 1837 found it plentiful about Alton which is close by, and even heard two examples singing at Selborne itself, where just ten years afterwards Prof. Bell ascertained that it bred. In winter some few stray from their ordinary haunts and have been taken or observed near London and Oxford, in Bedfordshire (Zool. s.s. p. 2562), Norfolk, Northamptonshire (according to Lord Lilford), Shropshire (Zool. p. 9780), Sherwood Forest, near Doncaster (Nat. ii. p. 164) and York (as Mr. Thomas Allis notified to this work), and at least twice in the North Riding near Bedale and Richmond (Zool. p. 3056).

Mr. R. Gray says that a specimen was shot near Yetholm in Roxburghshire about 1840, and one near Banchory in Aberdeenshire in December 1863, while Mr. Edward notices the occurrence of one in Banffshire (Zool. p. 6598), and the shooting of one near Edinburgh was announced by the late Prof. James Wilson so long ago as 1816 (Mem. Wern. Soc. ii. p. 658). In Ireland its presence has been recorded at Wexford by Mr. Blake Knox (Zool. s.s. p. 95).

The Cirl-Bunting is most numerous in the southern parts of Europe, and apart from Great Britain the most northern limit it has reached seems to be Heligoland, where it is known to have once occurred. In Belgium and Holland it is rare, but it is said to be plentiful in the valleys of the Moselle and the Rhine, and thence across to Thuringia and Moravia. It has been obtained both in Bohemia and Transsylvania, but is evidently scarce in each. In Turkey it becomes more common, and is resident, which is not the case with it in Central Europe, and though it only occurs rarely on the steppes of Southern Russia it is plentiful in the Crimea—especially on the mountains of its southern coast. Further to the eastward we know it not; but Strickland met with it at Smyrna, where it appeared to him to take the place of the Yellow-Bunting. In Greece also it occurs, chiefly as a winter-visitant from the North, but Col. Drummond-Hay found it breeding in Crete, though it was not very abundant there. It is common in Sicily and is widely dispersed throughout Italy and Switzerland. It occasionally visits Malta in autumn, but in Algeria is common in such localities as suit it and breeds in that country. According to Capt. von Homeyer it also inhabits the Balearic Isles; and is said by Col. Irby to be very frequent on both sides of the Straits of Gibraltar. In Portugal it is plentiful all the year round, and it seems to be pretty generally distributed in Spain. In France it is most abundant in the south, and but seldom breeds in the northern departments. Such is a brief and necessarily imperfect sketch of the distribution of this species, to describe which properly would no doubt require a personal knowledge of almost every district, for, when we regard England alone we find that one should be acquainted with nearly each parish in the southern and the western-midland counties in order to define with accuracy the localities it frequents, and doubtless the same extraordinary eclecticism is exhibited by the species abroad.

The adult male in summer has the bill bluish lead-colour, the palatal knob being well developed: the irides hazel: the top of the head, the lores and a stripe behind each eye dark olive, streaked with black; two more stripes, of bright lemon-yellow, run on each side of the head, the one from the nostril over the eye, and the other from the gape under the eye to the middle of the ear-coverts, the rest of which with the nape and sides of the neck are dark olive; back and scapulars rich chestnut-brown, some of the feathers having a median patch of dark brown, primaries and secondaries dusky black, with very narrow yellowish edges; upper and smaller wing-coverts dull brown tipped with lighter brown, the larger wing-coverts, with the tertials, dusky black, each feather being broadly margined with chestnut; upper tail-coverts yellowish-olive, streaked with dusky grey; tail blackish-brown, the middle pair of quills tinged with rufous, the two outer pairs with a large oblique patch of white on the inner web and the outermost pair with the basal two-thirds of the inner web yellowish-white; chin and throat black; below the black a crescentic patch of bright lemon-yellow, the ends of which reach to the lower side of the dark ear-coverts; upper part of the breast dull olive, bounded below by an almost continuous chestnut band, which is narrowest in the middle; belly and lower tail-coverts dull yellow, flanks pale dingy olive, streaked with dark brown; lower surface of the quills grey, slightly tinged with yellow: legs, toes and claws, light brown.

In winter the colours are less bright generally, and the black feathers of the head and throat have light margins.

The whole length of the male is six inches and a half. From the carpal joint to the end of the wing, three inches and a half: the second, third, fourth and fifth primaries are nearly equal in length, but the third is usually the longest in the wing, and the sixth is fully one-eighth of an inch shorter than the fifth.

The female wants the black and the bright yellow stripes on the head and throat, having but a pale yellow line over the eye ; the upper surface of the head and body is streaked longitudinally with black on the dull-olive of the one and the reddish-brown of the other; the lower surface of the body is similarly streaked with black on a dull and dingy yellow.

Young birds very closely resemble adult females, but all trace of yellow is wanting, and the plumage generally has a tinge of buff.

English naturalists are greatly indebted to Montagu for his careful and patient investigation of various subjects, and extreme exactness of observation, which enabled him to produce several valuable communications, and make many interesting additions to British Zoology. His discrimination of the species of Harrier which, both here and on the Continent, now bears his name has been already briefly mentioned (vol. i. page 138), and must always be regarded as a fact of great interest and importance, while his other ornithological discoveries, hardly if at all inferior to it, will be duly recorded in the progress of this work. It may be remarked that they are nearly all of a very different kind from those which nowadays pass as such—the recognition, namely, more by accident than by anything else, of various birds of foreign origin which from time to time visit these islands. Montagu perhaps stands alone in one curious particular. Being essentially a British naturalist it was his fortune to be the first to describe an exotic species, the American Bittern, from an example which had strayed, as the species still occasionally strays, to England. His ‘Ornithological Dictionary’ remains an enduring monument of his labours, though the alphabetical arrangement of the work and the want of any systematic key to it impairs its utility to beginners. A list of his many publications may be found in several bibliographical works, and a brief memoir of their author, who died June 20th, 1815, in his sixty-first year,* by Mr. Cunnington, has appropriately appeared in the 'Wiltshire Magazine' for 1857 (iii. pp. 87–94), since Col. Montagu was a native of that county, in which his family had long been seated. During the latter part of his life however he resided in Devonshire, where he, as above stated, discovered that the present species, hitherto only known to inhabit the continent, was a native of England, and the vignette here introduced is a representation of Knowle Cottage, situated about half a mile from Kingsbridge, at which Montagu lived for many years. For the opportunity of presenting this memorial of an English Zoologist, I feel myself greatly indebted to the kindness of the Rev. Robert Holdsworth, of Brixham, who supplied me with the sketch from which the woodcut was prepared.

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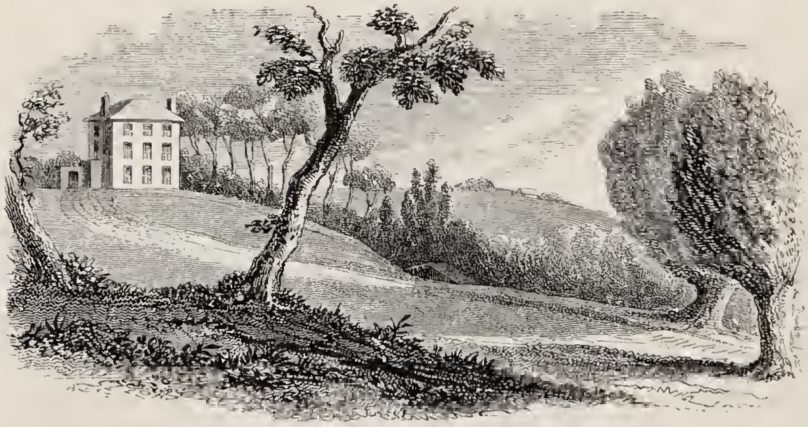
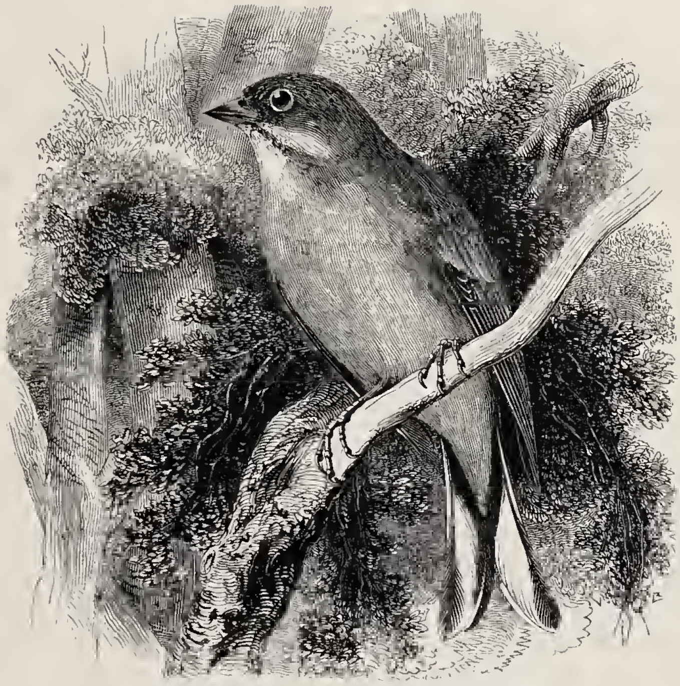
* In the 'Gentleman's Magazine' for 1815 (lxxxv. pt. 2, p. 281) it is stated that Montagu died on the 28th of August and in his sixty-fourth year, but the Editor learns from Mr. Cunnington (through the kindness of their common friend Mr. A. C. Smith) that the authority for the date and age here given in the text rests upon a manuscript by Montagu's daughter, Mrs. Crawford, and may therefore well be trusted.





Emberiza hortulana, Linnæus*.

THE ORTOLAN.

Emberiza hortulana.

The Ortolan, or Green-headed Bunting, as it was called when described and figured in 1776 by Brown in his 'Illustrations of Zoology' (p. 74, pl. 30), from a living specimen taken in Marylebone Fields, and then in the possession of Mr. Moon in Hyde Park, is a bird that for many years caused great confusion in the minds of English ornithologists. The example, just mentioned, when it died, was given to Tunstall (Synops. Newc. Mus. p. 68) from whose collection Latham (Gen. Synops. B. ii. p. 211) again described it, without knowing its history, and upon his redescription, Gmelin, in 1788, founded his *Emberiza chlorocephala* (Syst. Nat. i.

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[*] Syst. Nat. Ed. 12, i. p. 309 (1766).

p. 887) while Latham two years later (Ind. Orn. i. p. 418) named it *E. tunstalli.* This specimen being fortunately well preserved, still exists, with what remains of Tunstall's collection, in the Museum of Newcastle-on-Tyne, and on January 15th, 1828, was exhibited by Mr. Fox to the Linnean Society (Trans. Linn. Soc. xvi. p. 752), when it proved to be identical with the well-known *E. hortulana* of Linnæus. In May 1822, another specimen, now also in the same museum, was caught on board a collier, a few miles off the Yorkshire coast, and having been obtained by Mr. Fox (Synops. Newc. Mus. p. 69), formed the subject of Bewick's woodcut of this species,* while, in November 1827, a fine male was killed near Manchester (Zool. Journ. iii. p. 498), and having passed into the possession of the Author of this work was figured by Selby. In the winter of 1836–37 another male was netted near London, and deposited in the Zoological Gardens, as recorded by Blyth (Mag. Nat. Hist. N. Ser. i. p. 441). On April 29th, 1841, a fine specimen, now in the possession of Mr. Borrer (Ann. Nat. Hist. vii. p. 524), was shot on the viaduct of the London and Brighton Railway, near the Brighton station; and a male was shot April 27th, 1852, between Lancing and Worthing (Zool. p. 3476).

The appearance in England of several other examples of the Ortolan has since been recorded. One was killed in Scilly early in October 1851 (Zool. p. 3277), and one is said to have occurred in the Isle of Wight in 1867 (Zool. s.s. p. 912). An immature male killed near Shoreham is in Mr. Knox's collection; one was limed at Brighton September 30th, 1870 (Zool. s.s. p. 2383), and another is said to have been taken there early in May of the following year (Zool. s.s. 2682). Lord Clifton believes he saw one at Cobham in Kent April 10th, 1866 (Zool. s.s. p. 270); three are said by Capt. Kennedy on Mr. Sharpe's authority to have been shot at Cookham, while as many are mentioned by Mr. Harting as having been caught at Kilburn in Middlesex, of which one is in Mr. Bond's collection. An adult male was obtained May 5th, 1859, at Lowestoft (Zool. p. 6602). It has been stated that in the summer of 1838 one was killed at Earlham in Norfolk; in April 1866 one is said to have been netted at Yarmouth in the same county, and in 1871, six examples were sent to London from that place, which were said to have been caught there on May 5th (Trans. Norf. and Norw. Nat. Soc. 1871–72, p. 62). Two of these were placed in the Zoological Gardens by Mr. Bond (Proc. Zool. Soc. 1871, p. 775), and two were in Mr. R. H. Gurney's possession. Further northward an example was seen by Mr. J. C. Atkinson on the Guisborough Moors, in Cleveland, 16th August, 1863 (Zool. p. 8768). In Scotland Mr. R. Gray mentions one killed not later than 1836, in Caithness, and two in November, 1863, near Aberdeen. In Ireland evidence of the occurrence of the species is wanting.

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* Bewick adds that about the same time a pair were seen in the garden at Cherryburn, on the banks of the Tyne.

The Ortolan is only a summer-visitor to Europe, and the examples which have been met with in Great Britain, if they have appeared voluntarily, which in several instances may perhaps be doubted,* must have strayed from the wonted course of the species which hardly takes in the west or north of France; but considering the high northern latitude which it attains—breeding, as it does, in Norway every year so far as Throndjem, and occasionally according to HH. Palmén and Sahlberg so far as Muonioniska on the frontiers of Sweden and Finland—one may perhaps be rather surprised that more examples have not been recognized in this country. Still the remarkably local distribution of the Ortolan throughout Europe, which is hardly less extraordinary than that of the preceding species, may account in some measure for its scarcity in our island. Its affection for certain spots renders any attempt to treat of its distribution not only difficult but, for want of sufficiently precise information, almost futile. Its presence or absence cannot as yet be connected with any known peculiarity of geological formation, soil or crops. It was long ago said in France, and apparently with truth, to prefer wine-growing districts and to spread as these were extended, though it certainly does not feed upon grapes. But it is found equally in countries where vineyards are unknown, and is then a denizen of corn-fields and of the fences or hedges, if such there be, that surround them, so that the real cause of its partiality for either kind of agriculture remains to be discovered. Even so near to us as Holland it has been said by several authors to be rare, but the Editor knows that in some parts of that country, and especially near Valkenswaerd, it must be plentiful, from the number of eggs he has received thence. It would also seem that there are districts in which it is abundant in one year and in another almost wanting, and a misconception of this perhaps has given rise to the belief entertained by some that it is a species which is extending its range. Found sporadically throughout Germany it does not seem to penetrate further into Russia than its south-western Governments, and whether it is to be deemed an inhabitant of the Asiatic territories of that power depends chiefly on the value assigned to the distinguishing characters of a nearly-allied form—the *Emberiza shah** of Bonaparte, which, originally described from Persia, reaches the river Obi in summer, retreating in winter to India. The true Ortolan however seems to be abundant in the Caucasus and to reach Elburz. It is said also to have been found at Erzeroom and is possibly spread throughout Asia Minor. In Palestine it is very abundant and breeds. In Egypt it is a bird-of-passage, and in winter is very plentiful in Abyssinia, where it may possibly also stay to breed. We have no record of its occurrence on the intermediate part of Africa till we reach Algeria, where according to Loche it inhabits the Sahel; but other explorers of that country have not encountered it. Tyrwhitt Drake found it in summer at Tangiers, and Favier, as quoted by Col. Irby, states that it is very abundant there, but the last never met with it very near Gibraltar, though it is plentiful enough about Seville and in other parts of Spain. In Portugal it seems to have been recognized but once—near Coimbra. Throughout the rest of the European continent, always excepting the western and northern portions of France, and the eastern and northern portions of Russia, the Ortolan occurs in general terms pretty universally, but as before stated the universality of its distribution is so much interrupted as to render it sporadic at least in the breeding-season, for during its migrations it is frequently found in places to which it is at other times a stranger.

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* This species is every spring imported in great numbers into England for the table, and it is unquestionable that some examples may occasionally get loose. Tunstall imagined that his bird had escaped from a cage, which was not so likely at that time as a similar case would be now. Blyth mentions (Mag. Nat. Hist. N.S. i. p. 441) that live Ortolans were first brought to the London market in the spring of 1837, and that they came from Prussia. Of late years those we have the opportunity of eating are said to come from Holland, but possibly they have been caught in Germany and sent down the Rhine to Rotterdam for exportation. As Blyth's statement is no doubt to be trusted, specimens obtained in or about Britain prior to 1837 may be fairly deemed free from the taint that attaches to those suspected of being escaped prisoners.

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* This seems to be identical with the *E. cerrutii* of De Filippi, and whether both names may not also be synonyms of *E. buchanani*, the ordinary Indian form, the Editor has no means of ascertaining.

Hoy, in a communication to this work, says of the habits of this species in Flanders that "it makes its appearance at the beginning of May, and almost immediately pairs and commences building; its monotonous chirping notes are heard the whole day long. These birds prefer light sandy soils, and build invariably on the ground in fields of corn—at least I never met with a nest in any other situation: those I found were placed in a slight hollow, were something similar to the nest of the Skylark, but rather more compact; the interior lined with fine grass and a few hairs; the eggs are from four to six in number." They ordinarily measure from ·85 to ·72 by from ·66 to ·58, but occasionally not more than ·64 by ·55 in., and have a purplish- or reddish-white ground, spotted and blotched, but rarely veined, with very dark liver-brown—almost black, and sometimes with patches of dull lavender and brownish-red. In Central Germany the Ortolan is said to haunt the beds of willows and alders that grow on the edges of low-lying ground, but not to frequent marshy spots themselves. It is rather of a retiring disposition, the cock only shewing himself openly, while the hen must be sought to be seen. The song has some resemblance to that of the Yellow Hammer, but, though its first syllables have a strong metallic ring, it is less loud and on the whole more plaintive. The traveller in early summer in Norway, and probably the same is true with regard to Sweden and Finland, sees the Ortolan frequently by the roadside, sitting on the rough fences of split deal, so characteristic of Scandinavian agriculture, which enclose every plot of cleared land, or occasionally shifting its position to the roof of some log-hut; and the peasant of those countries trusts no bird so fully as a herald of warm and settled weather. Thus its far from melodious notes have a charm for him which dwellers in more temperate climates can scarcely appreciate. From the whole of Europe this bird retires as soon as the breeding-season is over, its southward return beginning of course soonest in the north, and when approaching the shores of the Mediterranean it collects in large flocks. On both of its migratory journeys it is eagerly sought by bird-catchers, and enormous numbers are netted and fattened for the table. It lends itself easily to their designs, for it is caught without much trouble, and seems to surpass all its congeners in the greediness with which it devours the food, chiefly oats and millet, set before it in captivity, until its body becomes coated with a thick layer of fat, only interrupted by a narrow line along the keel of the sternum. The flavour of the delicate morsel it then presents is almost proverbial. Its natural diet consists as much of insects—beetles of the family *Curculionidæ* especially—as of grain or other seeds.

The adult male in summer has the bill reddish-brown, the palatal knob small: the irides brown: head and nape greenish-grey, sometimes the one and sometimes the other tint prevailing, and occasionally streaked along the crown with dusky-brown; the orbits light yellow; the feathers on the back very dark brown along the shaft, but rufous on each side passing into olive near the edge; small upper wing-coverts wood-brown with paler edges; primaries and secondaries dusky, with a very narrow light-coloured outer margin, in some examples rufous in others yellow; tertials and larger wing-coverts blackish-brown with broad rufous or ochreous edges; upper tail-coverts wood-brown with obscure dusky streaks; tail-quills blackish-brown, the middle pair broadly and the rest narrowly edged with ochreous, and the two* outer pairs with an oblique white patch on the inner web; the chin and throat yellowish-green, in some examples passing into olive-grey on the upper part of the breast, in others only becoming paler, with dusky arrow-headed spots; the rest of the lower parts reddish-buff, deepest on the breast and palest near the vent; flanks tinged with wood-brown; inner wing-coverts and axillaries, pale greyish-white, often tinged with yellow, and the former mottled with dusky: legs, toes and claws, pale brownish-orange.

The whole length is six inches and one quarter. From the carpal joint to the end of the wing, three inches and a half: the second, third and fourth primaries nearly equal, and the longest in the wing; the fifth considerably shorter than the fourth.

The female usually has the head greyer, and more distinctly streaked with brown; immediately behind the nostril is a pale ochreous patch; the chin and throat paler, with a distinct line of dusky spots running from the base of the lower mandible on each side; the upper part of the breast clouded and mottled with dusky brown, and the reddish-buff below, as well as the tints of the plumage generally, less vivid; but other females are said to differ but little, except in paler coloration, from some of the males.

Young birds of the year resemble the female in her ordinary plumage, but the yellow tints on the head seem to be brighter, and the spots on the breast are more distinct.

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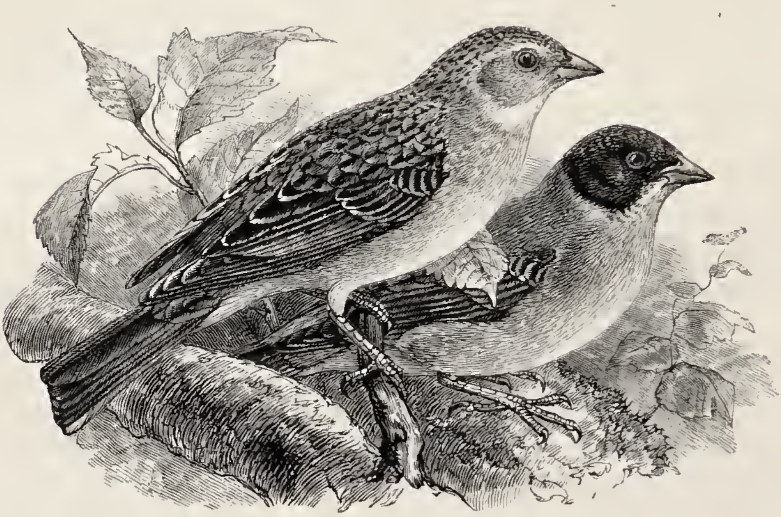
* Mr. Borrer's specimen, above mentioned, was said to have had the three outer pairs so marked. Unfortunately it has since been accidentally destroyed.



EUSPIZA MELANOCEPHALA (Scopoli[*]).

THE BLACK-HEADED BUNTING.

EUSPIZA, *Bonaparte*[†].—Bill hard, straight, conical, rather long and powerful; mandibles about equal in size, their edges but slightly inflected and sinuated; the palate almost smooth. Nostrils oval, basal and placed somewhat near the culmen, but quite clear of the feathers. Gape angular. Wings rather long: first primary finely attenuated and so small as to seem wanting; second, third and fourth nearly equal and one of them the longest in the wing. Tail rather long and slightly forked. Tarsus scutellate in front and at the lower part of the sides, which are elsewhere covered by an undivided plate, forming a sharp ridge behind, rather longer than the middle toe. Claws but slightly curved, that of the hind toe of moderate length.

THIS is the third species of Bunting whose first appearance in England it has been Mr. Gould's fortune to bring to the notice of ornithologists. He states (Ibis, 1869, p. 128) that a very fine old female specimen was submitted to him by Mr. Robert Brazener of Brighton, who had shot it on the racecourse near that town about November 3rd, 1868, while it was following a flock of Yellow Hammers.

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[*] *Emberiza melanocephala*, Scopoli, Annus I. Historico-Naturalis, p. 142 (1769).

[†] Supplemento allo Specchio comparativo delle Ornitologie di Roma e Filadelfia, p. 10 (1832).

Unlike the two other species of the family admitted to this work in the present Edition, that which is now under consideration is far from possessing a high northern range, and its claims to recognition as a "British Bird" are of the slightest. Still the fact that it has reached Heligoland, where Mr. Gätke has obtained three specimens in as many successive years (Ibis, 1875, p. 183), favours the possibility of its voluntary appearance in England, though the season of the year at which the example recorded by Mr. Gould occurred proves that it must have been a chance wanderer, for even in the south-east of Europe it is only a summer-visitant and in the south-west it seems never to shew itself. The Heligoland birds were met with at the end of May or in June. It is said to have been taken some six or seven times near Marseilles, all the examples but one, which was procured in autumn, being obtained in April or May. According to Dr. Salvadori and others it is not of frequent occurrence in Italy, though it is captured almost every year in Liguria, has been discovered breeding in the Veronese province and is still less rare in Venetia, no doubt passing over from Dalmatia, which has long been known as a country in which it is abundant. Further to the southward it has been once obtained at Rimini, once in Sicily and occasionally, according to Mr. Wright, in Malta. Several examples are said to have been killed near Vienna,* and one in Bohemia, while its occurrence near Kiev in Russia has been recorded. Turning to the south-east the bird becomes abundant in Turkey, Greece, Asia Minor and the Caucasus, whence it retires on the approach of winter to the North-west Provinces of India and the Deccan, where it is found in immense flocks. Though a summer-visitant to the Cyclades, Crete, Cyprus and Palestine, it is unknown in Egypt, or for the matter of that in any part of Africa.

This species is said by Canon Tristram to have in Palestine nothing in its habits and appearance to recall the true Buntings, but on the other hand Mr. Robson in a communication to Messrs. Sharpe and Dresser, describes them on the Bosphorus as being similar to those of the great Bunting, and in its manner of flying from one elevated post to another, with its legs hanging down, the likeness is obvious. Its song is said to be agreeable, and its nest to be a compact structure, lined with fibres and hairs, and placed either on the ground or in a low bush, often, according to Col. Drummond-Hay, on the stump of an old vine. The eggs, generally six in number, are quite unlike those of any known species of *Emberiza*, being of a pale greenish-white, speckled with light ash-colour and dull olive, besides a few patches of dusky lavender. They measure from ·9 to ·8 by from ·64 to ·61 in. This species seems to subsist almost entirely upon grain, in which respect it departs from most of the normal *Emberizidæ*, and it is said to do considerable damage to growing crops, though probably the young are fed with insects.

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* Naumann had information of a male, said to have been shot near Leipzig, but was unable to satisfy himself of its truth (Vög. Deutsch. iv. p. 231, note).

The adult male, in summer, has the upper mandible dark grey, the lower, horn-coloured : the irides hazel : the head and ear-coverts are deep black, traces of the brown edging of the feathers in winter being however often visible ; nape, sides of the breast, back scapulars, least wing-coverts and rump, bright orange-brown or light bay ; wings hair-brown, the middle and lower wing-coverts being broadly, and the flight-feathers narrowly, edged with brownish-white ; tail almost uniform hair-brown ; chin and the whole of the lower parts, bright gamboge-yellow, which extends under and behind the ear-coverts towards the nape so as almost to form a collar : legs, toes and claws yellowish-brown.

In winter the bright colours of the upper parts are almost entirely hidden by the dull brown edging of the feathers, and those of the back shew a dark brown shaft-stripe ; the yellow of the lower parts is also clouded by the feathers being tipped with ash-colour. The brilliant hues are however always perceptible at the base on examination.

In the adult female the black of the head is replaced by dark brown feathers with broad edges of a lighter shade, having a yellowish tinge ; the mantle and rump are of much the same colour as in the male, but the middle of the back, scapulars and least wing-coverts are very much duller and the feathers streaked with dark brown along the shaft; the quills of the wings and tail are as in the male; beneath, the chin and throat are dull white slightly tinged with yellow, passing on the breast into pale buffy-brown intermixed with yellow; sides of the breast patched with bay; belly pale dull brown mingled with yellow, especially in the middle; lower tail-coverts dirty yellow.

The whole length of the male is about six inches and four-fifths; the wing measures three inches and three-quarters: the second primary is slightly longer than the third or fourth and is consequently the longest in the wing. The female is a little smaller.

The separation of this species from the genus *Emberiza* seems to be advisable, its straight and powerful bill, almost devoid of any palatal knob, its essentially granivorous habit and the character of its eggs affording fair grounds for so doing; and it is worthy of remark that it was not referred to that genus by either of the two distinguished Russian naturalists who treated of it many years ago—Güldenstädt (N. Comm. Ac. Petrop. xix. p. 466) making it a *Tanagra*, and Pallas (Zoogr. Rosso-Asiat. i. p. 428) a *Xanthornus*, or, as we should now say, an *Icterus*. Two other beautiful species of the Old World have been generally, and most likely properly, assigned to the genus *Euspiza*—the *E. aureola* of North-eastern Europe and of Asia, and the *E. luteola* of Central Asia and of India—as well as the *E. americana* of the New World, though whether this last is rightly included the writer does not feel himself competent to declare.*

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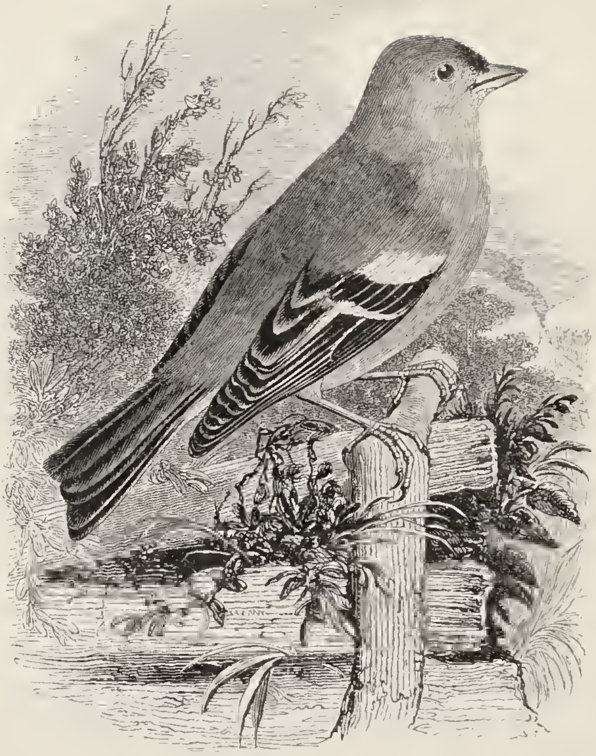
* The occurrence in Great Britain of two examples of the North-American White-throated Sparrow (*Zonotrichia albicollis*)—the one near Aberdeen, August 17th, 1867, the other near Brighton, March 22nd, 1872—has been recorded by Mr. Angus (Proc. N. H. Soc. Glasg. i. p. 209) and Mr. Rowley (Proc. Zool. Soc. 1872, p. 681) respectively. The genus to which this species belongs is allied to if not one of the true *Emberizidæ*, but as a land-bird of the New World it does not come within the scope of this book.

PASSERES. *FRINGILLIDÆ.*



Fringilla cœlebs Linnæus*.

THE CHAFFINCH.

Fringilla cœlebs.

Fringilla, *Linnæus*†.—Bill hard, straight, somewhat long, nearly conical, but bulging slightly and pointed ; mandibles nearly equal, edges plain. Nostrils basal, lateral, oval, partly hidden by projecting and recurved frontal plumes. Gape straight. Wings with the first primary finely attenuated and so small as to seem wanting, the rest varying in their comparative length in different species, but the second always shorter than the third, which or the fourth is longest in the wing. Tail moderately long and decidedly forked. Tarsus stout, shortish, scutellate in front, covered at the sides with a single plate. Claws moderately curved, rather short.

The male Chaffinch is one of the most handsome and sprightly of our common small birds, and being also confident in his behaviour, as though courting the notice of men, is extremely well known throughout nearly all parts of the

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[*] Syst. Nat. Ed. 12, i. p. 318 (1766).

[†] *Tom. cit.* p. 317.

British Islands. His gay appearance, peculiar call-note and merry song, which, beginning with the first open weather, is one of the earliest indications of returning spring, also render him a general favourite, notwithstanding a certain amount of damage he is accused of doing in gardens, when the seeds are newly sown. On the Continent, especially in Germany, he is one of the most highly-valued cage-birds, and in France his lively colours and demeanour have long made the phrase "*Gai comme Pinson*"* proverbial. From his perch on some moderately high twig the often-repeated burst of his strain attracts attention throughout the vernal season till midsummer, and is hardly overpowered by any other, even among the general choir of songsters, while the performer is easily descried and recognized by his variegated plumage. At this time, too, he frequently displays to advantage the command of wing he possesses, and, springing aloft for two or three yards to seize a passing insect, he proves an apt flycatcher, returning to his perch to treat his partner with another song and then repeating the aerial evolution. His habit of elevating the feathers of the sinciput, which seems to be a peculiarity common to all the species of his genus, gives him a pert air, not at all inappropriate to the boldness and loudness with which his voice proclaims his presence. In winter also he may be seen, somewhat subdued indeed but still sprightly and neat, busily engaged with his mates wherever food is to be found, whether intently searching for seeds among the chaff at the barn-door and round the stacks in the rickyard, or nimbly making his way in a succession of short hops across some fallow field or smooth lawn in quest of any sprouting weed.

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* The name *Pinson*, in Italian *Pinsione*, comes directly from the Low-Latin *Pincio*, which is supposed to be derived from or cognate with the Celtic *Pinc* (Littré, Dict. de la Lang. Franç. ii. p. 1125). This last word we have still as a local name in England in the forms "Pink," "Spink" and "Twink," obviously owing their origin to the bird's call-note ; and in like manner has arisen the German *Fink* and our "Finch." *Pinson*, though often spelt *Pinçon*, has, according to M. Littré, nothing to do with the verb *pinçer*, as Belon and some others have thought. In the North of England and in Scotland the Chaffinch is known by names of a very different kind, as "Scobby," "Shelly" and "Shilfa."

The Chaffinch had long been known on the continent as a bird-of-passage, but Linnæus, informed by Leche, first published the interesting information that in Sweden the hens left the country in winter while the cocks did not, and hence applied the trivial name of *cœlebs*, or bachelor, to the species in reference to these deserted males. The evidence of later Swedish authorities does not altogether confirm this observation. Prof. Nilsson, in 1817, said that but few of the species wintered in Sweden at all, but that these few were not males only. In 1835 he stated that the cocks both departed and returned before the hens, while, in 1858, he declared besides that the former have a winter-dress like that of the hens, but that each sex migrates separately. Sundevall agrees to the last assertion, denying, however, and as regards the adults unquestionably with truth, that the sexes are alike at any season. It is probable that most of these discrepancies are the result of observations made in different parts of the country, but other instances are known of the temporary separation of the sexes among birds. The testimony of the best observers in the British Islands is at variance on this point in the habits of the Chaffinch, and the diversity must be attributed to difference of situation. More than a century ago White of Selborne wrote that for many years he had remarked the vast flocks of hen Chaffinches, with scarcely a cock among them, that appeared in the fields towards Christmas, and naturally correlated this fact with Linnæus's statement. Selby, more than fifty years since, observed that in Northumberland and the south of Scotland few females were seen between November and the return of spring, and those only in distinct societies, while immense flocks of males remained during the winter. But, these accounts being doubtless true as regards the localities to which they refer, we have on the other hand men just as accurate—Montagu in Devonshire and Knapp in Gloucestershire, for instance, to say nothing of other more recent and not less excellent observers—denying that any such separation is apparent in their respective neighbourhoods. We certainly receive, in autumn or early winter, most likely from Norway and Sweden, large flocks of immigrant Chaffinches, which seem composed almost entirely of females, though young males that have not yet put on the external distinction of their sex may be among them. These strangers appear chiefly on the east coast of England, from Yorkshire southward, but how far they penetrate to the interior, and whether any great number of them remain with us till spring, are questions hitherto unanswered. That our home-bred birds should in some degree make room for them is only to be expected, but to what extent this movement takes place is also unknown. In Shetland, on the contrary, the number of females is said by Saxby to be very small as compared with that of the males, but in the north of Ireland, according to Thompson, very large flocks, among which there are none of the latter, occur at times in winter, while again he has seen flocks of moderate size comprising a fair proportion of both sexes, and these he is disposed to believe were indigenous birds.

Their flight, like that of most Finches, is undulating, and their food for the greater part of the year consists chiefly of insects, varied, especially during the winter, with seeds, some of which being those of very troublesome weeds, the birds that consume them ought rather to be deemed useful auxiliaries to the farmer and gardener, though they undoubtedly pilfer from stacks, and may at times do not inconsiderable damage by picking out the newly-sown corn or other seeds, when these are not buried deeply enough. But the loss thus inflicted seems to be more than compensated by the gain that results from their destruction of noxious insects, as witness the opinions of observers so well qualified as Mr. Hepburn (Zool. p. 298 and p. 573), M. Florent Prevost and Mr. Cecil Smith (B. Somerset. p. 174), and the enmity often shewn towards this species is most likely unjustifiable.

The Finches generally are remarkable for the compact, soft and beautiful nests which most of them build, and the Chaffinch is pre-eminently so. However different may be the outward appearance of the neat and closely-woven structure, the material upon which the whole tissue seems to depend is wool, into which green moss, lichens of various colours, and other substances are worked with wonderful skill so as to produce a shapely mass of almost uniform consistency. Outwardly, the texture is more or less studded with such lichens as may best accord with the situation in which it is placed, and films of the thin inner bark of certain trees, especially the birch, are often interwoven; these external additions, which artfully serve to protect the nest from discovery, being further secured by spiders' webs, or the webs alone may be thickly laced across and around the whole. Inside, the wool is still more closely felted, and covered with a smooth lining of hairs, while to complete this masterpiece of upholstery a few soft feathers are deftly arranged, often so as to curl over the interior and more effectually conceal its contents. This exquisite fabric seems, on the evidence of more than one observer, to be the work of the hen-bird only, and numerous instances have been remarked wherein, unable to procure all her proper materials, she has supplied the want by using the best substitutes available—paper torn to tatters being often one of them—but the beauty of the nest is nearly always spoilt thereby. The place chosen for it is as variable as the substances of which it is composed, but the forked bough of a bush or small tree is a very favourite situation, and it is seldom built lower than five or six feet or higher than twelve or fifteen from the ground. The eggs are usually five in number, measuring from ·85 to ·75 by from ·59 to ·55 in., a dwarf being, however, not more than ·63 by ·48 in. They are of a pale greenish-blue, generally suffused with reddish-brown or purplish-buff, so that the prevalent tint is commonly a warm one; on this many markings of dark crimson are deposited, some in the form of well-defined spots, but others almost invariably with blurred edges that are insensibly lost on the ground-colour.

The Chaffinch is generally distributed over the British Islands—those among the Outer Hebrides which are treeless, Orkney and Shetland being perhaps the only places where it does not yearly breed. Yet it visits even those barren wastes occasionally, Mr. Elwes having seen one on a mountain in

Jura at the height of 2500 feet, while it occurs plentifully every winter in Shetland. As a straggler it has been observed by Herr H. C. Müller in the Færoes. In Norway and Sweden it extends in summer far beyond the Arctic Circle, and, though becoming somewhat rare in those high latitudes, Herr Collett, in June 1872, met with a pair on the rocky island of Gjæsvær, near the North Cape, which is almost destitute of any arboreal vegetation. In the interior of Finland it is far from uncommon, and it seems to be met with throughout the forests of Russia so far northward as Archangel. Pallas vouches for its appearance in Siberia, but how far to the eastward it ranges is unknown, since his successors in the ornithological exploration of that country do not mention it. Mr. Blanford has obtained it in Beloochistan. It is a very common winter-visitant to Palestine, and breeds abundantly in the highest parts of the Lebanon. Mr. Wyatt obtained a specimen in the Sinaitic peninsula, and it occurs in winter in Egypt, but is rarely seen further south than Cairo, and, according to Capt. Shelley, probably does not go beyond the First Cataract of the Nile. It is a common winter-bird in the Levant generally, and Col. Drummond-Hay believes that it breeds in Crete. In North-west Africa it is very rare, and only a few examples have been observed in Algeria, where the closely-allied but quite distinct *Fringilla spodiogenia* takes its place, while in Madeira, the Azores and Canaries it is represented by two other species, *F. tintillon* and *F. teydea*. Almost everywhere throughout Europe it is as common a bird as it is with us, and is generally more or less migratory in its habits, but in a locality so far south as the Balearic Islands it is said to be resident.

The adult male in summer has the bill of a deep bluish lead-colour, inclining to pink at the base of the lower mandible: the irides hazel: the feathers of the forehead black; top of the head and nape dark bluish-grey, the latter bounded by a narrow half-collar of dark oil-green; upper part of the back dull chestnut, changing just above the rump to oil-green, which continues over the upper tail-coverts; scapulars and least wing-coverts dark bluish-grey, the next tier of wing-coverts pure white, the lowest tier of those which cover the secondaries deep black at the base, broadly tipped with white and often tinged with yellow, thus forming two conspicuous white bars across each wing; the rest of the wing-coverts and the quills dusky black, the latter narrowly edged with greyish-white, the inner primaries having also a white patch at the base of the outer web; the tertials broadly margined with yellowish-white; the two middle tail-feathers greyish-black, the next three pairs dull black; the next pair dull black, with a narrow white outer margin and a triangular white patch on the inner web; the outer pair black only at the base along the shaft and on both sides of it near the tip, the rest being white; the cheeks, ear-coverts, chin, throat, breast and flanks, a rich reddish-brown, becoming paler on the belly and lower tail-coverts: legs, toes and claws, brown.

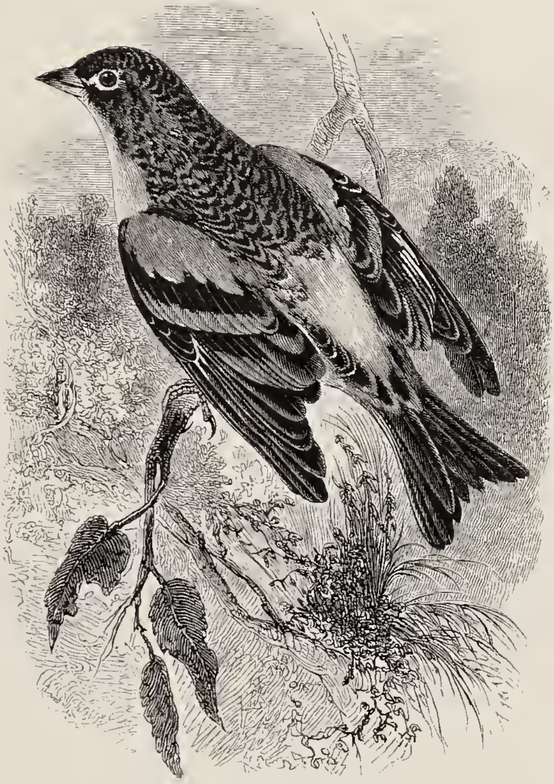
In winter the bill is of a brownish flesh-colour: the plumage of the upper parts, but especially of the head, is obscured by the long brown margins of the feathers. The edging of the tertials is ochreous, and the white of the wings is often tinged with yellow, while the colouring of the breast is much less bright.

The whole length is six inches; that of the wing, three inches and three-eighths; the third and fourth primaries are equal and the longest in the wing, but the fifth is nearly equal to them and longer than the second, which again is longer than the sixth: the first being, as already stated among the generic characters, almost obsolete.

The female has the head and back hair-brown, darkest on the sides, with a very perceptible pale patch on the nape; the rump and tail-coverts are much more dingy than in the male; the lower parts are of a dull fawn colour, and the black of the quills is less pure, but the two white bars on the wings are rather less conspicuous.

The young in their nestling plumage much resemble the adult female, but their colours are less vivid and more blended.

Both this species and the next have some long, fine hairs growing among the feathers at the back of the head.



FRINGILLA MONTIFRINGILLA, Linnæus*.

THE BRAMBLING.

Fringilla montifringilla.

THE BRAMBLING or Mountain-Finch, as some British authors have chosen to call it, is an autumnal visitor to these islands, coming from the north and passing the winter with us; but in many places throughout the country it appears very irregularly, both as regards numbers and time of arrival. It is said to have been seen on the Cumberland hills as early as the middle of August, but this statement, made in Bewick's work, if it did not arise in error, can hardly be matched elsewhere. Even on the north-east coast of Great Britain it does not usually appear until about the middle of October, and it is often two months later before the largest flocks arrive. Mr. R. Gray says that in the east of Scotland on its first coming it betakes itself to the higher grounds, but after a time, especially on the approach of snow, it descends to the low-lying farms, where it becomes a familiar tenant of the stack-yard. In England, however, it rather frequents stubble-fields enclosed by thick hedges, feeding on the grain and seeds to be found there. Mr. Scales, formerly of Beechamwell, in Norfolk, told Sheppard and Whitear that he considered it of service to the land, from its devouring those of the knot-grass, *Polygonum aviculare.* Later in the season, and particularly in severe weather, the woodlands form its chief resort, and it congregates in large numbers under old beeches, diligently searching for the fallen mast of those trees, which during frost or snow seems to furnish its main supply of food. Mr. Alston too, earlier in the year, has known it to eat the kernels of nuts. At times a few Bramblings will associate with the flocks of Yellow Buntings and Chaffinches in the open fields and stack-yards, but by far the greater number form larger or smaller gatherings of their own, though these may occasionally be joined by some Chaffinches, who seem to profit by the greater strength and activity of their congeners in clearing the ground and discovering the hidden food. As above stated the flocks vary much in size in different years, and perhaps a season or more will pass without a single bird shewing itself in a locality where it had before been numerous. Such irregularity is doubtless in some degree due to the effects of climate in the mother-country of the species, but it is also strongly influenced by the abundance or scarcity of food in the several parts of these islands, and with us there is hardly any season or place that produces a plentiful crop of beech-mast in which Bramblings will not make their appearance in corresponding numbers—though as regards England it must be remembered that they seem to be always comparatively rare in the midland and still more so in the western counties. Occasionally the flocks will consist entirely or chiefly of cock-birds, but on the other hand in North Lincolnshire Mr. Cordeaux has always found these singly. In this respect therefore the habits of the Brambling resemble those of the Chaffinch. Several observers in this island have recorded the vast extent of the migrating flocks noticed by them, as in the case which Mr. R. Gray quotes, where in Stirlingshire in January 1867, a column of birds a quarter of a mile long and fifteen yards broad was seen passing overhead, but at no great height—every slight alteration in the flight of the leaders being copied by their followers, giving the whole mass a strange, serpent-like appearance ; or again in the instances referred to by Mr. Stevenson, in one of which a flock was seen on a March morning in 1865, streaming from its roosting-place in Stoke park, near Slough, without intermission for thirty-five minutes, and forty-five birds were killed at a single shot by the observer. Yet the numbers that visit us seem insignificant compared with the swarms that in some seasons occur on the continent, for Bechstein states that in 1780, which was a great year for beechmast, some hundred-thousand frequented the foot of the Thüringerwald, and that the like was the case in 1804 and 1805. As vast must have been the hosts which, according to De Montbeillard, appeared on the Rhine in 1735 and 1757, and in Lorraine in 1765, when every night more than six-hundred dozens were killed, while large flocks visited Burgundy in 1774, and Württemberg in December, 1775. M. de la Fontaine computes a flight which appeared in Luxemburg in February, 1865, to have numbered sixty millions !

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* Syst. Nat. Ed. 12, i. p. 318 (1766).

They are not known with certainty to have bred with us except in captivity, and it is seldom that an example in full plumage is found at large in this country. As regards date, the latest occurrence of the species in any season is probably that mentioned by Baikie and Heddle in Orkney, May 19th, 1839. A long search in various publications fails to shew that it is often seen later than the middle of March, by which time it has usually left Britain, one must therefore receive with caution the statements which have been made as to its breeding in England. Those in H. L. Meyer's 'British Birds' may for various reasons be justifiably discredited, but Mr. Atkinson recorded (Zool. p. 9210) on the authority of Mr. Guy Dawnay a supposed instance of the Brambling breeding near Thirsk, the bird, however, which built the nest and laid the eggs was not procured. Mr. Harvie Brown in 1861 saw near Stirling a pair, whose actions made him feel sure that they had a nest (Zool. s.s. pp. 69, 892). In Germany, on evidence just as unsatisfactory, the species has also been believed occasionally to pass the summer, and Brehm says that it bred in his neighbourhood in 1818. In confinement the Brambling has frequently built a nest and laid eggs, though it does not seem to have hatched its young. Even in Norway it does not generally breed to the south of lat. 59° N. or in Sweden to the south of lat. 62° N., and in both countries this boundary must be understood to have reference only to the mountainous districts, for in the lowlands of each its breeding-range lies far to the northward. On the higher verge of the fir-forests, however, it is pretty numerous in summer, and is still more abundant where the birch becomes the prevalent growth, following that tree to its furthest limits. The nest is usually placed, some ten or fifteen feet from the ground, at the base of a horizontal branch and against the bole of a birch, or in the fork of two or more upstanding smaller branches, which support and are often enclosed within its walls. In substance and structure it greatly resembles that of the Chaffinch, but is larger and less compact. The eggs also are very like those of that species, but they more frequently want the reddish, suffused tinge, and have the markings better defined and less blurred, though some specimens of each are quite indistinguishable. They vary in size from ·78 to ·67 by from ·59 to ·53 in. Not unfrequently an egg is found in the nest in colour nearly agreeing with the rest of its contents, but measuring from ·86 to ·83 by from ·67 to ·65 in. Such examples are believed, and perhaps correctly, to be the produce of the Cuckow, but proof of their parentage is as yet wanting. The cock has a song which an unpractised ear, however, may pass many days, even in forests where the bird is common, without catching, for it is short and is delivered in a low undertone ending in a hoarse and droning note, which is often the only part audible at a short distance and is much like that uttered by the Greenfinch. Mr. Walmesley who correctly describes the Brambling's song (Zool. p. 1024) seems to be alone in having heard it in this country, except when the bird is caged, and, as Blyth remarked (Mag. Nat. Hist. vii. p. 487), it is not in the least like a Chaffinch's. The call-note is a single, harsh monotonous chirp and in captivity is frequently uttered at night, on the slightest or even without any apparent disturbance, and so sharply as to sound like a scream of terror.

The Brambling is pretty generally distributed, subject to the irregularity of its appearance before noticed, throughout the British Islands in winter, its visits to the extreme west of England depending a good deal, however, on the severity of the weather. In Ireland, owing to the unfortunate dearth of observers, less is known of its occurrences, but since Thompson states that it sometimes appears in the north by the thousand, and mentions three specimens which had been obtained in Kerry, it evidently ranges over the whole island, though, as Mr. Watters remarks, it gradually decreases in numbers as it approaches the south. A small flock has been once noticed in the Færoes. On the continent its breeding-range extends eastward to the Sea of Ochotsk, and its limits in summer for Norway and Sweden have already been approximately stated, but they cannot be defined as regards the Russian dominions. In winter it occurs almost all over temperate and southern Europe, and it crosses the Mediterranean to Algeria, while it also reaches Sicily and Malta. At the same season it also appears in Greece, Asia Minor and Persia, after which we know little of its limits in Asia, except that it is occasionally found in the north-west Himalayas, till we get to China, where Mr. Swinhoe has obtained it so far south as Amoy, and in Latham's time it had been met with off the coast of Japan.

The male in summer has the bill bluish-black: the irides brown: the whole of the head and cheeks from the corners of the lower mandible, the nape and sides of the neck and the upper half of the back, jet-black glossed with steel-blue on the head, each feather of the neck and back being greyish-white at the base, the lighter portion generally shewing in life on the nape, and forming an ill-defined whitish patch thereon ; scapulars pale buff ; least wing-coverts dull orange passing into white ; greater wing-coverts jet-black, tipped with buffy-white, forming a conspicuous bar across the wing ; wing-quills black, narrowly edged outside with greyish-white, the inner primaries having also a white patch at the base of the outer web, the tertials broadly edged with buffy-white ; lower half of the back white, intermixed with a few black feathers ; upper tail-coverts black, tipped with greyish-white ; tail-feathers shining black, the middle pair inwardly edged with greyish-white, the outer pair with an elongated white stripe on each side of the shaft at the base and a whitish tip to the inner web ; the chin and throat are commonly of a pale yellowish-buff, but some examples have these parts black like the head*; the upper part of the breast and sides reddish fawn-colour ; lower part of the breast, the belly and lower tail-coverts, dull white ; the flanks spotted with black ; axillary plume, and the smaller lower wing-coverts bright yellow ; the other under wing-coverts white : legs, toes and claws, dark reddish-brown.

The whole length of the male is six inches and three-quarters, that of the wing three inches and five-eighths ; the second, third and fourth primaries are nearly equal, but the third very slightly exceeds the other two, and is the longest in the wing—the first primary being so small as to seem wanting, and the fifth about one-eighth of an inch shorter than the third and considerably longer than the sixth.

The male in autumn and winter, as represented in the woodcut, has the bill bright yellow, tipped with dark horn-colour : the glossy black feathers of the head and upper parts of the neck and back are more or less obscured by their long margins of light reddish-brown, while those of the sides of the head and neck are edged with greyish-white; the least wing-coverts are of a deeper orange, and the greater wing-coverts and tertials are tipped and edged with the same colour, which in a less degree tinges the upper tail-coverts. The rest of the plumage is much the same as in summer except that the tail-feathers are edged with greyish-white, and the tint of the throat and upper part of the breast is deeper, almost approaching to a dull orange.

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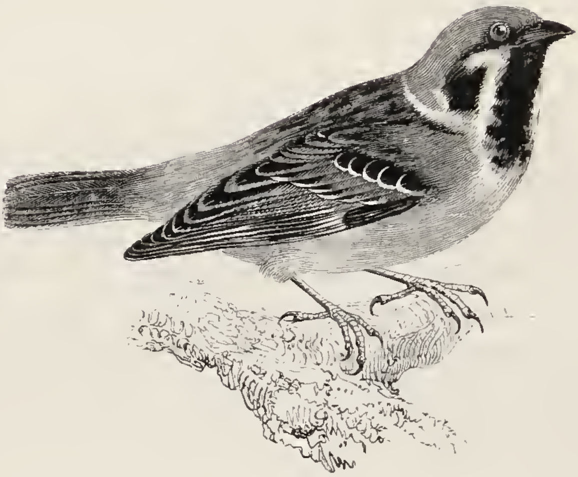
* Specimens shewing this peculiarity have been noticed by Latham, Gloger and Messrs. Sharpe and Dresser, and such are in the collections of Messrs. Bond, J. H. Gurney, Swinhoe (from China) and Rowley—the last of whom has figured one of them, though in winter-plumage, having the black feathers tipped with brown (Orn. Miscell. p. 90, fig. 2).

The female changes much less with the season, and has the bill dull horn-colour, darkest at the tip: the feathers of the top of the head and upper part of the back are dark brown, but so broadly bordered with light hair-brown as to seem chiefly of the latter hue spotted with the darker shade; the lores and ear-coverts dull mouse-colour passing into ashy-grey on the sides of the neck; the patch on the nape is pale brownish-grey; the wings are marked much as in the male, but the orange tints are very dingy, and the black much less deep, as is also the case with the tail; the secondaries are outwardly edged with dull yellow; the rump is mixed with, and the upper tail-coverts are wholly, blackish-grey; from each corner of the lower mandible there runs a short streak of blackish-brown; the chin, throat and upper part of the breast are reddish fawn-colour, deepening on the sides of the breast to a very dingy orange; the belly is dull white and the lower tail-coverts are tinged with rufous.

The young on leaving the nest have the head and back greyish-brown, deepening to blackish-brown on the sinciput and on either side of the nuchal patch, which is greyish-white; the least wing-coverts are orange-brown; the next series dull black, tipped with dull white; the greater wing-coverts also black, tipped with pale buff; the wing-quills black—the primaries and secondaries edged narrowly with yellow, the tertials broadly with orange-brown; the tail-coverts and tail-quills black, broadly tipped with light reddish-brown; the chin greyish-white; the throat and upper part of the breast dull fawn-colour, deeper in tint on the sides; the belly and lower tail-coverts greyish-white.



Passer montanus (Linnæus*).

THE TREE-SPARROW.

Passer montanus.

Passer, *Brisson* †.—Bill hard, strong, somewhat conical but bulging above and below, longer than deep; upper mandible larger than the lower, edges nearly plain. Nostrils basal, lateral, rounded, almost hidden by projecting and recurved frontal plumes. Gape straight. Wings with the first primary small and attenuated, but distinctly developed, the third or fourth rather the longest, but the second, third and fourth, sometimes even the fifth, are not very unequal. Tail moderate or short, and nearly square. Tarsus stout, nearly as long as the middle toe, scutellate in front, covered at the sides by a single plate. Claws moderately curved, rather short.

The numerous species of Sparrows ‡, some of which are found in almost every part of the Old World, excepting Australasia, are well entitled to generic distinction, but their precise affinity to other groups of Finches is not so clear. Certain systematists indeed would remove them from the

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* *Fringilla montana*, Linnæus, Syst. Nat. Ed. 12, i. p. 324.

† Orn. iii. p. 71 (1760).

‡ The word being here used in its technical and limited sense.

Fringillidæ and place them among the Weaver-birds, which by many naturalists are regarded as forming a distinct family—*Ploccidæ*. The question whether this view be correct needs not discussion here, but even if it be the inclusion of the Sparrows among the Weaver-birds is an extremely doubtful step, and in this work it seems at present advisable to retain our two species in the position they have long occupied, though their place between the genera *Fringilla* and *Coccothraustes* is obviously faulty. The Tree-Sparrow is an active, lively bird, in appearance and some of its peculiarities, very similar to the well-known House-Sparrow, for which it may, by the careless, be readily mistaken, though it can always be distinguished by its reddish-brown crown, the black patch on the sides of its neck, and its doubly-barred wings*. Its note also, once recognized, can never fail to ensure its discovery, and there is further this remarkable and important distinction between the two species, namely that in the common or House-Sparrow the old cock differs greatly in plumage from the hen, whereas in the Tree-Sparrow both sexes are very nearly alike. In Britain it is far less numerous as a species than its congener, and though occurring throughout most parts of England, as will presently be stated at greater length, it forms with us comparatively small settlements instead of being generally distributed. No plausible reason can be as yet assigned for its being limited to such stations, but the fact is undoubted. While certainly with us generally preferring trees growing in the open country to woods or the neighbourhood of man, and never in Britain inhabiting towns, it sometimes affects buildings, as appears by a communication from the Messrs. Dimock, of Uppingham, who observed it frequently building in the thatch of a barn, in company with the House-Sparrow, entering it by holes in the outside. This statement is confirmed by Hoy's experience on the continent, where he often found the Tree-Sparrow breeding in tiled roofs, as well as in stacks of faggots, and is further corroborated by Mr. Hewit-

* Unfortunately this last peculiarity has not been sufficiently shewn by the draughtsman in the woodcut at the head of this article.

son, who says that he has known it in Northumberland to breed under the coping of old walls in the society of the kindred species. The like choice has been noticed in the same district by Mr. Hancock, and by Vieillot in France; while, as will presently appear, throughout the greater part of its range it has become almost exclusively an house-haunting bird. It will also build in the deserted nests of Crows and Pies,* in which it constructs a domed abode, and it has bred in the hole of a tree that had been occupied by a Green Woodpecker. Still, while the House-Sparrow has to a great extent abandoned its natural habit, the Tree-Sparrow, from its comparative shyness in this country, has with us generally preserved its ancient mode of building, and usually frequents old trees remote from houses, such as those at Wainfleet in Lincolnshire, where Montagu was enabled to determine several important facts respecting it. It is perhaps most plentiful along the rows of pollard-willows that fringe so many of our sluggish rivers and canals, where it easily excavates in the soft, rotten wood a receptacle for its nest, consisting, in such cases, of but a small quantity of dry grass with a lining of feathers. The eggs, from four to six in number, measuring from ·8 to ·69 by from ·56 to ·52 in., are of a french white, blotched or speckled, sometimes sparingly but generally freckled all over, with a deep hair-brown: when the markings are collected in large masses other splotches of ash-colour may be seen on the very apparent white ground, and in most nests of the species there is one egg of this character, whatever be the pattern of the rest. The young are fed with insects and soft vegetables, which also form the principal sustenance of the parents during spring and summer. At other times they feed on seeds, and in winter both young and old will occasionally flock with other Finches and Buntings to rick-yards or any places likely to supply food. This seasonal change of locality shews that the Tree-Sparrows which abide with us are yet partial migrants, and it is unquestionable that a large number visit England, especially its eastern side, every autumn. Mr. Cordeaux says that in Lincolnshire he has sometimes seen five or six hundred together. The birds have also been observed on their passage hither as recorded by Blyth (Field-Nat. i. p. 467) and Mr. Rodd (Zool. p. 7312). In the former case, which happened in October, 1833, flocks to the number of an hundred settled on a ship bound for the Thames as she passed the coast of Norfolk, Suffolk and Essex. In the latter, thousands, it is said, boarded a vessel between the Dogger Bank and the Galloper light-ship in November, 1860. The Editor may add that he has rarely crossed the North Sea without seeing some birds of this species which have often appeared far from land.

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* As already stated in this work (vol. i. p. 22) Malherbe has found nests of this species in Sicily beneath an eyry that contained two Eaglets.

The common call-note of the Tree-Sparrow is a chirp, not unlike though shriller than that of the House-Sparrow, but, as Blyth remarks (Mag. Nat. Hist. vii. p. 488), it has others in great variety. The cock has also a proper song, which the same observant naturalist describes as "consisting of a number of these chirps, intermixed with some pleasing notes, delivered in a continuous unbroken strain, sometimes for many minutes together; very loudly, and having a characteristic sparrow tone throughout."

The Tree-Sparrow is a local and comparatively rare species almost everywhere in England—even in those parts wherein it is most abundant—while in others it occurs but as a straggler. The English counties in which it seems not yet to have been recorded as breeding are Cornwall, Devon, Wilts, Hants, Surrey, Herts, Middlesex, Bedford, Monmouth, Worcester, Westmoreland and Cumberland, but it has probably been overlooked in all these except the two first, the two last and Monmouthshire. It has not been known to breed in Wales, and in Scotland its settlements are still more sporadic—the counties of Berwick, Haddington, possibly Clackmannan, Perth, Aberdeen, Elgin and, since 1872 (Proc. Nat. Hist. Soc. Glasgow, 1875, p. 101), Sutherland being those alone in which as yet its nests have been found. In England probably, and in Scotland certainly, it is more numerous in the east than in the west, while in Ireland it was altogether unknown until procured by Mr. Blake-Knox (Zool. s.s. p. 2018) at Dalkey and Baldoyle, where, though scarce, it is believed to be resident. It is not found in Orkney or Shetland, but, about 1869, a few pairs reached the Færoes, where they have not only settled but thriven and multiplied, so much so, writes Capt. Feilden, as to be a perfect pest. In Norway also this species seems to be extending its range, and, though extremely local and mostly confined to the coast-district, it has, according to Herr Collett, crossed the Arctic Circle. Pastor Sommerfelt saw four examples, he says, in 1855 at Polmak on the Tana, which were collecting feathers for their nests, though these he could not find.* Throughout Sweden and Finland it occurs, but is still rare and exceedingly local. Thence it is found in places, and sometimes abundantly, to the Petchora valley. Indeed its numbers seem to increase as we go eastward, and it extends across Siberia to the Pacific and reaches Japan, being common, according to Capt. Blakiston and Mr. Henry Whitely, at Hakodadi. Throughout China and its chief islands it was observed by Mr. Swinhoe to take the place of the House-Sparrow, inhabiting the towns and behaving with the careless effrontery generally considered to be the peculiar characteristic of that species, but this seems also to be the case wherever it occurs in Southern Asia. According to Dr. Cabanis (Mus. Hein. i. p. 156) it has been sent from Manilla in the Philippines, but there is nothing to shew that it may not have been originally imported thither from China. However it is said to be the common Sparrow of Java, and Dr. Cantor procured it at Singapore. Sir Robert Schomburgh describes it as being plentiful in Siam (Ibis, 1864, p. 256), and it is certainly found from Pegu (where the natives treat it, according to Beavan, with the greatest kindness) and Arracan, throughout the hill-ranges of Assam and along the

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* The Editor and his companions Messrs. Wolley and Hudleston who were at this place the same summer were not even so fortunate as their friend the worthy pastor. No birds of this species were seen by them there.

Himalayas, to Nepaul. Mr. Scully states that it is the common species of Eastern Turkestan, where it is a permanent resident up to an elevation of about 7,500 feet. Thence to the westward its limits are not easily traced, for though De Filippi observed it at the foot of Demavend, it does not seem to have been noticed by any of the naturalists who have explored Armenia, Anatolia or Palestine, nor is it recorded from the Caucasus, though said to be abundant in South Russia. On the other hand Dr. von Heuglin says that it visits Arabia and Egypt. It occurs, though rarely, in Algeria. In the islands and peninsulas of the Mediterranean it is scarce and extremely local, but this last seems to be its characteristic everywhere except in the more eastern part of its range, where, as already stated, it has learnt to adapt itself to circumstances and has become a dependent on man. Its distribution in Europe generally calls for no further remark.*

In summer the bill of the male is lead-coloured, but during the rest of the year black: the irides hazel: the lores and a streak under the eyes black; the top of the head to the nape dull nutmeg-brown; cheeks and anterior ear-coverts white, with a triangular black patch covering the posterior ear-coverts and extending obliquely downwards to the jowl; mantle and scapulars bright orange-brown, lightest on the nape, and broadly streaked with black; least upper wing-coverts bright nutmeg-brown, the next tier black, with broad buffy-white tips; the greater wing-coverts brownish-black, with broad outer edges of orange-brown and tipped with buffy-white; wing-quills dull black, the primaries unevenly and the rest evenly margined with orange-brown; tail-coverts uniform pale brown; tail-quills brown, with light yellowish-brown edges; chin and throat black; sides of the neck white; breast and belly dull brownish-white, darker or tinged with buff on the sides, flanks and lower tail-coverts; lower wing-coverts pale fawn-colour: legs, toes and claws, pale brown.

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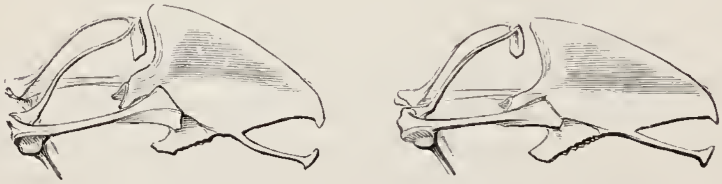
* Dr. Brewer informs the Editor that it has been unconsciously introduced to St. Louis in North America, as ascertained by Dr. Merrill.

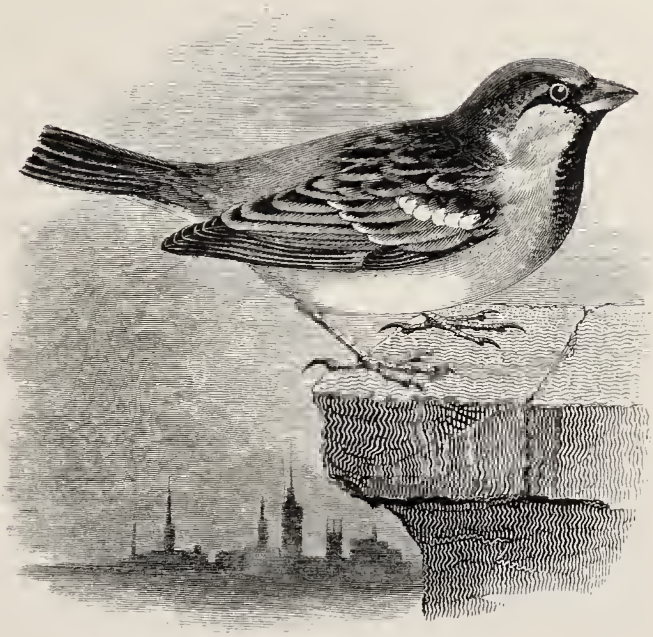
The whole length is five inches and five-eighths; that of the wing about two inches and three-quarters: the second primary is equal to the fifth, and longer than the sixth; the third is rather longer than the fourth, and is the longest in the wing; the fourth rather longer than the fifth.

The female is only five inches and three-eighths in length; but her plumage resembles that of the male, except that its colours are not quite so bright.

The young birds in their nestling-feathers have the top of the head and least upper wing-coverts dull orange-brown; in other respects, even to the black throat and the white sides of the neck, they much resemble the adults; but the colours are everywhere paler and more dull.

The vignette below represents the breast-bones of the Brambling and the House-Sparrow.





PASSER DOMESTICUS (Linnæus*).

THE HOUSE-SPARROW.

Passer domesticus.

OF all our British Birds the Sparrow † is found throughout the year, whether in country or town, more attached to and identified with the habitations of men than any other;

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[*] *Fringilla domestica*, Linnæus, Syst. Nat. Ed. 12, i. p. 323 (1766).

[†] This familiar bird in olden days was nicknamed, just as the Redbreast, Wren, Titmouse, Daw and Pie were called Robin, Jenny, Tom, Jack and Mag respectively. "Philip Sparrow" was a great favourite with the early English poets, but for centuries past this prefix, which is said to have been purely imitative of the bird's chirp, seems to have dropped out of use. Mr. Skeat in his excellent edition of Langland's 'Piers the Plowman,' published for the Early English Text Society, has shewn (part II. pp. xvii., xxi.) that two of its ancient versions, one at least written soon after the year 1400, mention "Sire philip þe sparwe." Skelton, Poet Laureate to Henry VIII. (ed. Dyce, i. p. 51) has an elegy on the death of a pet Sparrow ("whyte as mylke," whom "Gyb our cat hath slayne"), intituled 'The boke of Phyllyp Sparowe' and written before the end of 1508; while Gascoigne, who was born about 1525 and died in 1577, also indited 'The Praise of Philip Sparrowe.' Both the latter have the contraction

and such is the confident familiarity obtained by long intercourse, that from the thatched roof of the peasant's cottage to the sculptured column of the prince's palace, all buildings are alike subject to its intrusion. Everywhere bold, active, vigilant and assuming, there is yet this difference observable, the bird that is reared in the smoky city affords but a poor example of the colours ornamenting that which is seen in the countryman's garden, or at the farmer's barn-door.

Our Sparrow pairs early in the year, and being one of the most prolific of birds, great animosity and numerous contests for choice or possession occur at this season. There are few who have not witnessed in spring the scuffle and confusion of a Sparrow-fight, when five or six cocks may be seen engaged in indiscriminately attacking, buffetting, biting and scrambling over each other, with all the chatter and fury of excited rage; but the matter in dispute being adjusted, each retires from the contest to attend to his mate and the more important duties of the season. Their nests are placed under the eaves of tiled or thatched roofs, in holes of walls, in the spouts of water-pipes, or in any crevice that will afford sufficient space and seeming security. But while availing itself of all these and several more sorts of artificial accommodation, the Sparrow often, and especially as summer draws on, builds for itself a nest in the branches of tall trees of almost any kind*, or among ivy and other climbing plants, seldom, however, choosing a spot that is far from an inhabited house. In such cases—and they must be accounted its natural mode of nidification—the structure is very large, more than a yard in circumference, and covered with a dome.

of the name to "Phip", and the last applies it throughout to a female. Shakespear (King John, i. 1) makes Gurney answer the younger Faulconbridge "Good leave, good Philip"; to which the latter rejoins "Philip? sparrow!"; and Sir Philip Sidney (Astrophel, s. 83) has a sonnet to a Sparrow, beginning "Good brother Philip", and ending "Leave that Sir Phip, lest offe your necke be wroong." The expression was also known in Britanny and is duly noted in Le Gonidec's Breton Dictionary (p. 316). See further Nares's 'Glossary' (pp. 374, 375) and Mr. Harting's 'Ornithology of Shakespeare' (p. 145).

* Even the "Puzzle-monkey" (*Araucaria imbricata*) from the Chilian Andes, now so generally grown in our gardens and pleasure-grounds, is resorted to for this purpose.

The whole of its outworks are composed of straw, hay or dry grass, often intermingled with such shreds of manufactured stuffs as may be in the way, while the interior is profusely lined with feathers, and access thereto is gained by a hole left in the side. When, from the locality selected, the dome and outworks are not required, the amount of vegetable matter used is much less, and when a very small cavity is occupied perhaps only two or three straws may be found among the feathers which seem indispensable. Indeed so great is the bird's fondness for warmth that abundance of feathers are used to line even a nest in the inner side of the thick thatch of a barn, and it has been seen collecting them in winter and carrying them to the hole in which it often roosts in the company of its fellows. The first batch of eggs usually consists of five or six, and two other sets are frequently produced in the season. They are greenish-white, blotched, spotted, streaked or suffused with ash-colour and dusky brown, varying considerably in the quantity of this secondary colouring matter: their length is from ·95 to ·82, their breadth from ·66 to ·64, but an exceptionally small egg will measure ·75 by ·55 in.

Occasionally the Sparrow plays the invader's part and seizes on the mud-built nest of the House-Martin, which after vain show of resistance, has to yield possession to the intruder, though cases are recorded in which the evicted owners are said to have revenged themselves by walling-up their enemy alive, and leaving him to die—a prisoner in the domicile he has violated.* This act of aggression is perhaps the only charge against the Sparrow that can be maintained in an ornithologist's eyes; but here it is not intended to go into the vexed question of the comparative profit or loss of his existence, as regards the gardener and agriculturist. Very much is to be said on each side, and the bird's best friends will do wisely by eschewing any violent partizanship until far more careful observations—especially by disinterested and unprejudiced persons—have been made. It may be freely admitted that in many instances the damage done to pease and ripening grain is incalculable; but equally incalculable is the service as often performed by the destruction of insect-pests. Not only are the young, during the earlier part of the breeding-season, mainly fed on destructive caterpillars, but the parents, for their own sustenance then capture, even on the wing, a large number of noxious insects in their perfect stage*. Thus it is still a question whether the benefit conferred is not an equivalent for the corn and seeds stolen during the rest of the year, and it must be always borne in mind that a very large portion of the food of this and other species of granivorous birds is such as could never be turned to any useful end. What, however, are called "Sparrow Clubs" for the indiscriminate destruction of this and other small birds deserve nevertheless to be regarded with the utmost abhorrence.

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* The story is a very old one, but though instances of Sparrows turning out Martins occur every year, evidence of the revenge said to be taken by the latter upon the former is most unsatisfactory. It is generally offered without even the slight corroboration that would be afforded by information as to time, place or observer—and the last, from the language used, would seldom seem to have been a naturalist. Most of the instances, even in modern times, rest admittedly on second-hand reports, as those given by Jesse (Gleanings, ser. 2, pp. 99, 100) and Macgillivray (Br. B. iii. pp. 591, 592). The best authenticated perhaps is that for which M. de Tarragon personally vouches (Rev. Zool. 1843, p. 324), but this witness speaks of the aggressor being a "moineau friquet" *i.e.* a Tree-Sparrow, and this fact casts a shade of suspicion on his evidence.

The great attachment of the parents to their young has been frequently noticed. Prof. Bell, in 1824, stated (Zool. Journ. i. p. 10, note) that a pair of Sparrows, which had built in a thatched roof at Poole, were seem to continue their regular visits to the nest long after the time when the young usually take flight. This went on for some months, till in the winter, a gentleman who had all along observed them, determined on investigating the cause. Mounting a ladder, he found one of the young detained a prisoner by a piece of string or worsted, which formed part of the nest, having become accidentally twisted round its leg. Being thus unable to procure its own sustenance, it had been fed by the continued exertions of its parents. A parallel instance had already been recorded by Graves, who, finding a nestling Sparrow in like manner entangled by a thread, observed that the parents fed it during the whole of the autumn and part of the winter, but, the weather becoming very severe soon after Christmas, he disengaged it lest its death might ensue. In a day or two it accompanied the old birds, and they continued to feed it till the month of March, by which time it may be presumed to have learnt to get its own living.

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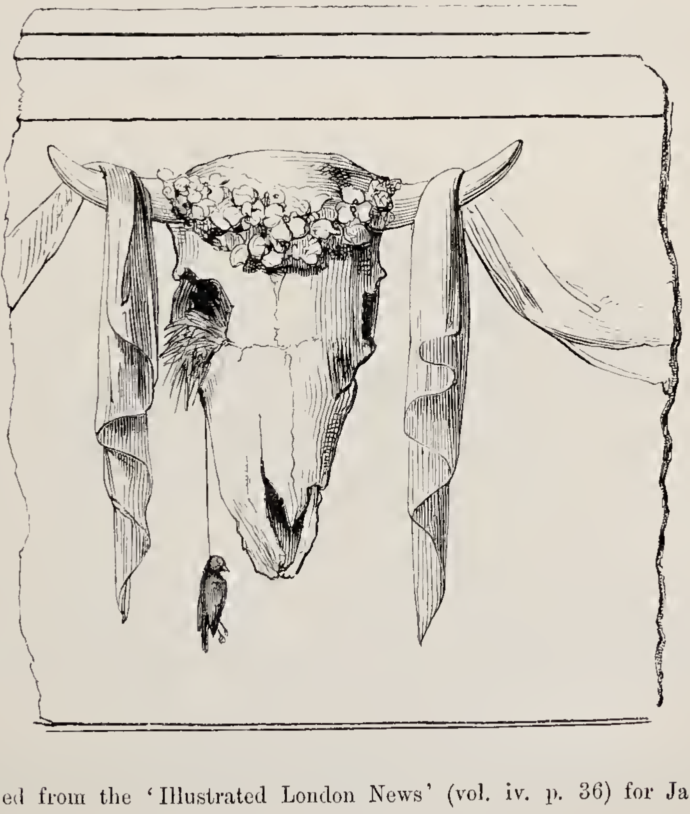
* Particularly *Phyllopertha horticola*—the chovy, as it is called in East Anglia, where in some seasons it swarms and is most mischievous.

The woodcut * represents the sad fate that befel a less fortunate Sparrow which had built its nest in the ornamental frieze of the Rotunda, in Dublin. Amongst the materials used for that purpose, there chanced to be a woollen thread, with a loop at one end. By some accident the bird got its neck into the noose; and, all its efforts to escape being vain, was miserably hung below its own home.



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* Copied from the 'Illustrated London News' (vol. iv. p. 36) for January 20th, 1844.

The Sparrow, as before observed, is seldom seen far from the habitations of men; but as summer advances, and the nestlings are able to go abroad, both old and young resort in flocks to the nearest corn-fields, and feast on the milky grain; but when the crop is carried, their supply being cut off, they return to the vicinity of houses, to seek again the adventitious meal there afforded them.

The House-Sparrow is common over nearly all of the British Islands, the chief exception being those of the Outer Hebrides, save Lewis—where, though now abundant, it seems not to have shewn itself till about 1830, and was not seen there even in 1842 by James Wilson—and Barra—where alone it was observed in 1830 by Macgillivray; but there are many isolated spots in Scotland* where it is very rare, as some parts of the Highlands, according to the same naturalist, or is altogether absent, as the hill-farms in Ayrshire, according to Mr. Gray. Probably the same might be said of Ireland, if more were known of the ornithology of that country, since Lord Clermont, in a note kindly furnished to the Editor, states that, though common in the immediate neighbourhood, one pair only (which appeared for a few days in the spring of 1870) had been seen in the course of many years about the house, stables and gardens of Ravensdale Park near Newry. In Norway it now occurs in most of the settlements, though missing some of them entirely, along the coast to the Loffodens and Alten, and is in such places generally resident; but further to the northward it only occasionally shews itself, and has not yet made good its footing either in Vardö or Vadsö. In Sweden it follows the settlers into the forest-wilds, and the most northern point at present recorded for it is Karesuando—but this is beyond its ordinary range, though by 1854 Wolley found that it had established itself at Muonioniska, not much to the southward. Passing eastward it seems to be very generally distributed throughout Finland excepting perhaps its northern parts, and Dr.

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* Mr. Rowe states that he is informed that at Shepstor, a moorland village in Devon, the Sparrow is never seen. This is the sole exception to its universal distribution in England known to the Editor.

Malmgren reports it as common all the year round at Kajana. It is abundant at Archangel, and occurs sporadically in the valley of the Lower Petchora, where, according to Messrs. Harvie Brown and Seebohm, it is remarkable for its bright coloration. In Siberia it seems to have followed the post-roads, but to frequent only the vicinity of the stations near which corn is grown. Yet its invasion of that country is of modern date and since the Russian conquest. In some degree Pallas has traced its gradual progress across the Asiatic continent where its most northern limit in the Jenesei-valley is Vorogovo in lat 61° N. and, according to Dr. Von Middendorff, its most eastern is the confluence of the Shilka and Argun. Ornithologists are still divided in opinion as to whether the Sparrow of India (the *Passer indicus* of many authors) should be regarded as a distinct species or not. Mr. Dresser (who has perhaps examined a larger series of specimens than any one else) believes that no valid difference can be maintained, and if we follow him we find that the present bird has a very wide range in Asia, extending from Yarkand, where Dr. Severzov obtained it, to Siam and Ceylon—though here as in Europe there are many localities (not apparently unsuited to it) in which it does not occur. Returning westward some wide gaps hinder us from tracing its presumedly continuous range, but it inhabits Beloochistan, Bokhara and Persia, has been sent to the Zoological Society from Trebizond, and is the common species of the Levant generally—the neighbourhood of houses being here as elsewhere always understood. It is resident in the Nile-valley as high as Kordofan, and is common, though not universally distributed, in Algeria and Morocco. It also occurs in Madeira, but apparently not in the other Atlantic Islands. In the Iberian and Italian peninsulas it is in some measure replaced by two allied species (the *P. hispaniolensis* in the former and the *P. italiæ* in the latter), but throughout the rest of Europe it is almost everywhere common.*

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* Dr. Hartlaub has obligingly communicated the information that until the last seven or eight years no Sparrows were to be seen within the precincts of the

The bill of the adult male in the breeding-season is a very dark lead-colour: the irides hazel: lores and a streak under the eyes, black, while just above and in front of each eye is a short streak of white; top of the head to the nape ashy-grey; cheeks and anterior ear-coverts greyish-white, posterior ear-coverts black; behind the eyes a triangular patch of rich chestnut-brown passes round the back of the head to the nape, where it joins the corresponding patch on the other side, and thence descends along the sides of the neck; immediately succeeding this half-collar is another of ashy-grey mixed with chestnut-brown; the mantle, scapulars and least upper wing-coverts are rich chestnut-brown, the feathers of the two first black in the middle with ochreous edges; the middle wing-coverts dull black, broadly tipped with white so as to form a conspicuous bar; the greater wing-coverts and remiges dull brownish-black edged more or less broadly with orange-brown; back dark smoky-grey, passing on the rump into olive-grey; tail-quills dark brown, with lighter edges; chin* and throat black, bounded by dull white which passes into grey on the breast and subsequently into pale greyish-brown on the belly and flanks, leaving the middle of the former of a dirty white; lower tail-coverts dull ochreous-white, indistinctly streaked with brown; lower wing-coverts shining greyish-white: legs, toes and claws, brown.

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remarkable fortress of Königstein in Saxony, but since that time the species has become familiarized there. So far as the Editor is aware this bird is not known to thrive anywhere away from human habitations, and as above said it keeps extending its area as desert countries are settled by man, being dependent on him for its living. Thus the questions are opened whether it should not be regarded as a parasite throughout the greater part of its present range, and what should be deemed its native country. These are points which never seem to have been discussed, but for all that are none the less worthy of consideration. Gifted with much greater locomotive powers than are the several species of rats and mice which have accompanied man in his wanderings, the advances of the Sparrow are much slower, but perhaps on that account the surer. Of late however man has taken to aiding its progress, and through importation it is now naturalized and become common in many of the large towns of North America, in Bermuda and Cuba, in Mauritius and Réunion, in Australia and New Zealand. In most of these places it will of course oust some of the indigenous species and will most probably in a few years become an intolerable nuisance.

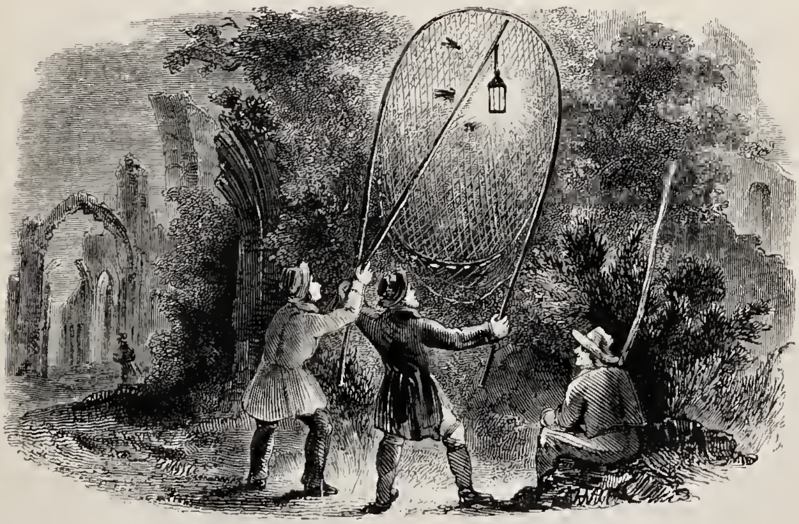
* Mr. Rowley has a specimen in which the chin is chestnut like the back.

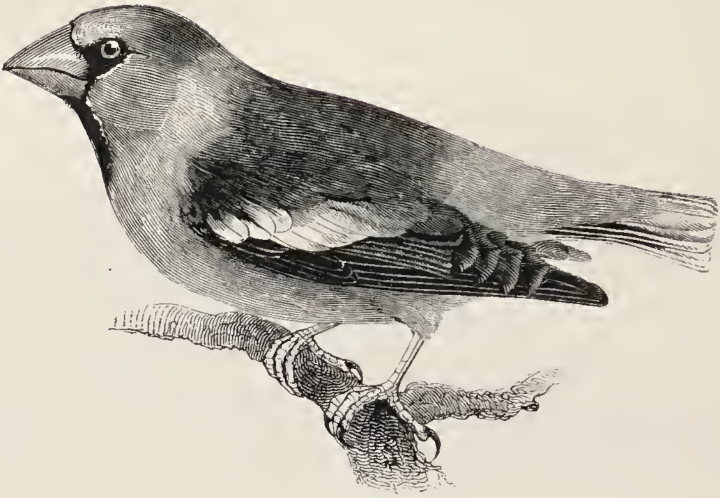
The whole length is about six inches and a quarter; that of the wing, three inches: the second, third and fourth primaries nearly equal, but the fourth rather the longest; the fifth a little shorter than any of them, and a good deal longer than the sixth.

In autumn and winter the grey and chestnut-brown of the head are almost hidden, and the colours of the upper parts generally obscured, by the long wood-brown edges of the feathers, while from the same cause the white of the cheeks and lower parts is much suffused with dull mouse-colour, and the black of the throat interrupted by dirty white.

The female has the bill brown; the head and neck of an almost uniform brown with a stripe of pale, dull buff running backwards from each eye; the feathers on the back and wings are edged with dull buff; the white bar on the wing is tinged with ochreous; chin, throat, breast and all the lower surface pale wood-brown, rather darker on the sides and flanks.

The vignette represents a common way of catching birds, especially Sparrows, at night and usually known as "Bat-fowling."





COCCOTHRAUSTES VULGARIS, PALLAS[*].

THE HAWFINCH.

Coccothraustes vulgaris.

COCCOTHRAUSTES, *Brisson*[†].—Bill hard, nearly conical, very thick at the base, tapering rapidly to the point; culmen more or less rounded; the mandibles nearly equal, edges inflected and slightly indented. Nostrils basal, lateral, oval, nearly hidden by projecting and recurved frontal plumes. Gape slightly arched. Wings with the first primary finely attenuated and so small as to seem wanting, the third and fourth primaries nearly equal, and rather longer than the second. Tail short, and more or less forked. Tarsus scutellate in front, covered at the sides with a single plate, stout and shortish. Claws moderately curved, rather short and strong.

THE HAWFINCH was for a long time described in many works as an accidental visitor, appearing only in autumn or winter; but, as increased attention was bestowed on ornithology, more correct views on the subject prevailed, and this bird is now known not only constantly to inhabit various parts of England in considerable numbers, but also is believed to be increasing year by year, both in numbers and in range.

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[*] Zoographia Rosso-Asiatica, ii. p. 12 (1811).

[†] Orn. iii. p. 218.

This supposition was at first thought to be erroneous, for so great is its shyness, that it can undoubtedly exist unsuspected in many a district, until some lucky chance reveals its presence to the less watchful, or some more than usually close observer detects its sly and stealthy movements which ordinarily defy near approach.*

One of the best and earliest accounts of its habits is by the late Mr. Henry Doubleday, of Epping, in the 'Magazine of Zoology and Botany' (i. p. 448). Writing in 1837, he says that having for some years given close attention to the habits of the species he can safely assert that it is a permanent resident, and cannot perceive any addition to its numbers by the arrival of foreigners at any season. In his neighbourhood its principal food appears to be the seed of the hornbeam (*Carpinus betula*), but it also feeds on the kernels of haws, laurels, plums and other stone-fruits, and in summer makes great havock among green pease in gardens near the forest.

About the middle of April the Hawfinch pairs, and in a week or two begins to build. The nest is variously placed, but most commonly in an old scrubby hawthorn, and is often much exposed; the horizontal arms of large oaks, the heads of pollard hornbeams, hollies, and occasionally fir-trees in plantations, are also chosen as a site—the elevation at which it is built varying from five to twenty-five or thirty feet. It is composed of dead twigs, of oak especially and honeysuckle, intermixed with pieces of grey lichen; the quantity of this last material differing much, but being never absent. In some nests it is only very sparingly placed among the twigs, in others it forms the greater part. The lining consists of fine roots and a little hair. The whole fabric (as figured at page 110) is very loosely put together, and to remove it uninjured requires considerable care.

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* The Editor may frankly say that he has not half-a-dozen times had the opportunity of seeing this bird at large, and never obtained more than a momentary glimpse of it, sufficient to assure him as to its identity. He therefore does not hesitate to avail himself of the carefully recorded details of its habits given by so trustworthy an observer as that whose account is epitomized in the text.

Mr. Doubleday says in continuation, that the young are hatched about the third week in May, and, so soon as they are able to provide for themselves, unite with their parents, in flocks, varying in number from fifteen or twenty to one or even two hundred. In this manner they remain through the winter, feeding on the hornbeam-seeds which have fallen to the ground, and only separating at the approach of the breeding-season. The male has no song worth notice; but may be heard in warm days in March, when several are sitting together on a tree, uttering a few notes in a soft tone, bearing some resemblance to those of the Bullfinch; and Montagu is a witness to its singing pleasantly in winter.

Mr. Doubleday further remarks, that though so common in his neighbourhood, the Hawfinch is but little known, which fact is to be attributed to its shy and retired habits. It seemed to him to be rapidly increasing in numbers, and the anticipation, thus expressed, has been and is being fulfilled. The foregoing observations leave little to be added on the habits of this bird. Even while compiling the present account of it, the Editor has received overwhelming proofs*, in addition to the evidence to the same effect published since Doubleday's paper appeared, of the constant spreading and ever increasing abundance of the Hawfinch. No attempt to account for this can be made. The bird, however, still remains a local species, and though it has become so plentiful in many parts of the country, there are yet wide districts in which it is absolutely unknown. The partiality, observed by Doubleday, for the hawthorn as a site for its nest seems to be pretty well maintained, but the bird has learnt to build also in almost any kind of tree or shrub, from the cedar of Lebanon to the ivy on a wall, as well as to use almost any kind of materials for its purpose—the structure being always a platform of twigs, with a shallow cup, often neatly wrought, in its centre. Still with this ever increasing abundance of the species and extension of its range its shy habits have undergone little if any change. It generally perches on the highest branch of a tree, or upon a dead or naked bough, whence it keeps so good a look-out that it is very difficult of approach, and even if seen it may well pass for some common species of Finch if the observer be not pretty acute.

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* It would be quite impossible here to give a tithe of the very full details with which he has been favoured by many correspondents to whom he is greatly indebted for their information.

The eggs, in number from four to six, are commonly of a pale olive-green, spotted with black, and irregularly marked with bold streaks and dashes, or vermiform lines of dark olive. Other specimens have a very decided blue tinge, and occasionally the markings are almost or even entirely wanting. Others have the ground-colour reddish as Lord Clifton informs the Editor. They measure from 1·08 to ·9 by from ·79 to ·62 in.

It is in what are known as the home-counties, Middlesex, Essex, Hertford, Buckingham, Berks, Surrey and Kent that the Hawfinch is most plentiful, and its abundance in the last is shewn by the fact that in the present year (1876) Lord Clifton, as he has informed the Editor, knew of more than fifty nests at Cobham. Mr. Cecil Smith has reason to believe that it has bred in Somerset, and to the eastward of long. 2° W. it has been ascertained to breed in every county south of York, save Stafford, Leicester and Lincoln—in all which, however, the discovery of its nest is probably only a matter of time. In winter it is recorded as having occurred in every English county except Westmoreland, and sometimes in great numbers, for it would seem that it occasionally migrates to this country in considerable flocks. Evidence of its appearance in Wales is not forthcoming, but it is no unusual winter-visitant to Ireland, having been obtained at various places from Donegal round the eastern side of that island to Kerry, while it may possibly have bred there, since Mr. Watters says that an egg sent to him from Meath was similar to those of this species obtained from the continent. The same observer notices the tameness of examples seen by him in the Phœnix Park, near Dublin, where it has been more often observed than elsewhere in Ireland—in singular contradistinction to its well known peculiarity in other localities. In Scotland its occurrence is chiefly accidental, and for the most part in winter only; but it has been obtained near Newtown-Stewart in Galloway, and has been traced, according to Mr. Gray, from Dumfriesshire to East Lothian, and thence to Perthshire, Aberdeenshire, Banffshire—where Mr. Edward informed Mr. More that he believed a pair had once bred—and Caithness.

Eastward and northward from the British Isles this bird is found occasionally in the extreme south of Norway, but can scarcely be considered an annual visitor to that country. In Sweden it extends further towards the north, having been seen by Zetterstedt (Resa genom Umeå Lappmarker, p. 156), at Wilhelmina in Åsele Lappmark. In Finland it is still rarer and it seems not to appear generally in Russia north of Rostoff, lat. 60° N. though, as Mr. Harvie Brown informs the Editor, an example has been obtained at Archangel: it must however be more common in the south. It is found throughout the middle and southern parts of Siberia, having been met with at Irkutsk and on the Amoor. In Mongolia it is said to be a bird of double passage and rather numerous. Mr. Swinhoe speaks of it as ranging in China from Pekin to Shanghai, and it occurs in Japan, whence specimens have been described by Temminck and Prof. Schlegel as forming a variety—*Coccothraustes vulgaris japonicus*, but these Mr. Dresser declares can be matched by others from Spain and Italy.* It has not yet been recognized from India, but is found, though rarely, in Persia, and in Asia Minor it is said to be a resident. Canon Tristram met with it once in Palestine, near Gilead; and it occasionally strays to Egypt, whence a single example is said to have been procured. In Algeria it is more frequent, and it has occurred, says Loche, in all the three provinces of that country. In Morocco, however, it would seem again to grow scarce, though there is incontestable proof of its appearance in that empire. Throughout Europe, the northern parts already named being excluded, its distribution requires no additional notice, save the remark that it is there, as with us, a more or less local species and in most places is rare. In all the countries it inhabits, the Hawfinch is most generally a resident—that is to say as regards the adults, since the young unquestionably leave their birth-place towards autumn. This sedentary condition of the former may be to some extent understood from the consideration that their food consists in great part of the seeds of trees, the fleshy pulp of the most succulent and sapid fruits being wholly rejected for the sake of the enclosed kernel—and whether it be the hard stone of the cherry which is adroitly cracked between the bird's mandibles or the comparatively fragile shell of the hornbeam's keys which offers no resistance worth mentioning to the same powerful crushers, the contained seed is the sole object sought.

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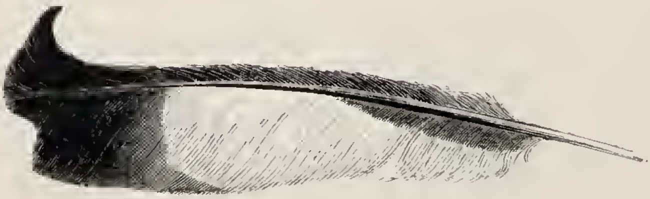
* This careful ornithologist states that, on comparing a series of specimens from various localities, he finds that those from Northern Europe are duller in colour than others from more southern countries, and that natives of our islands are perhaps the dullest of all, though sometimes a British example may be found as richly coloured as any from the South of Europe.

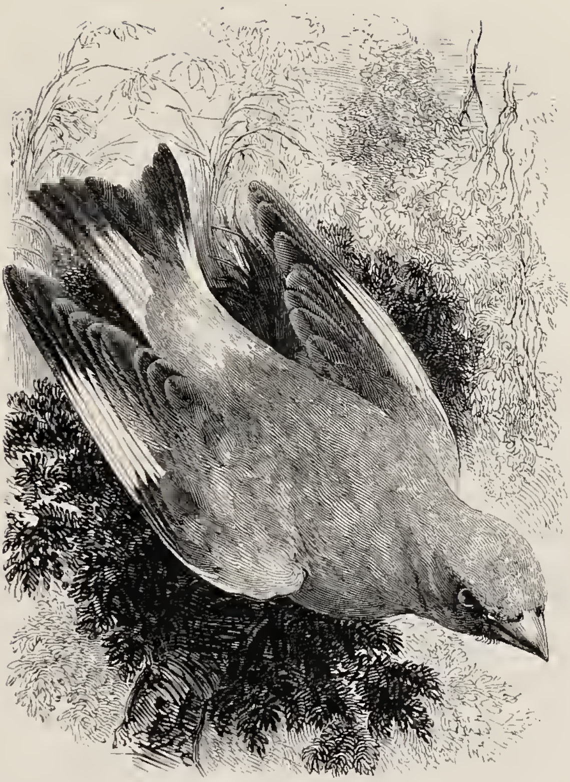
The bill of the adult male in summer is a deep leaden-blue: the irides greyish white: a thin black line stretches across the forehead and expanding on the lores surrounds the eyes; the top and sides of the head dull orange-brown, lightest and tinged with ochreous towards the forehead and on the cheeks, darkest on the temples and sinciput; nape and sides of the neck ash-grey; upper part of the back, scapulars and tertials, dark chestnut-brown which becomes paler on the lower part of the back; middle wing-coverts white, except the three innermost, which are dull orange-brown; the other wing-coverts black; wing-quills black, glossed with steel-blue on the portions left uncovered when the wing is folded, with an irregularly shaped white patch on the inner web—these patches decreasing in size from within outward, and forming a conspicuous band when the wing is open; the sixth and four succeeding primaries formed like a bill-hook, as figured in the vignette; the secondaries are nearly square at the tip; rump and upper tail-coverts dull orange-brown; the two middle tail-quills greyish-brown, tinged with rufous and indistinctly tipped with white; the rest of the tail-quills black at the base and on the outer web, with the distal half of the inner web white—the proportion of white increasing in each feather from within outward; chin and throat velvet black; sides of the neck, the breast and belly, pale nutmeg-brown; vent and lower tail-coverts dull white: legs, toes and claws, pale wood-brown.

The whole length is fully seven inches; from the carpal joint to the end of the wing, four inches: the second, third and fourth primaries very nearly equal, but the third rather the longest; the fifth an eighth of an inch shorter than the fourth; the sixth three-eighths of an inch shorter than the fifth: the tail very slightly forked.

In the female, the black frontal line and lores are much less conspicuous than in the male, and the patch on the chin is smaller; the colours generally are much less bright, and more blended—the top of the head, rump and tail-coverts in particular wanting the warm tint of the male; the white of the larger wing-coverts is more mixed with brown, and the outer webs of the tertials are bluish-grey.

In the young, and in the adults during winter, the bill is of a pinkish flesh-colour, inclining to pale brown on the ridge; the head, neck, and upper parts, yellowish olive-brown; the bar on the wing less conspicuous; the throat yellow, bounded by a small line of brown spots, indicating the outline of the black gular patch in the adults; lower parts pale yellowish-brown, each feather tipped with darker brown.





Coccothraustes chloris (Linnæus *).

THE GREENFINCH.

Coccothraustes chloris.

The Greenfinch or Green Linnet, or Green Grosbeak as some book-makers have called it, is one of our commonest birds, and remains in this country throughout the year, changing its station occasionally to obtain food or shelter in severe weather. It frequents gardens, small woods, and enclosed fields, being seldom seen far from trees or hedges, though it finds its living chiefly on the ground, where it searches for grain, seeds or insects. The notes of this bird are somewhat harsh and wanting in melody, but the song of the cock, begun rather late in spring, and prolonged beyond midsummer, has that in it which harmonizes with the sultry season when it is most often heard, for the full vernal chorus of the grove overpowers the droning trill that afterwards becomes an acceptable though monotonous strain. This, however, he is not soon tired of uttering, and perched in a tree-top will reiterate it almost without variation, for half an hour together. At times indeed, he will launch forth into the air, and, after beating about vaguely for some space, will, with outstretched wings and tail, soar in a semicircle to another like station, singing the while; but such a feat is chiefly if not solely performed in the early days of courtship, and as the summer draws on, he seldom indulges in this graceful flight, but as rather becomes his portly figure remains stolidly seated while he trolls his lay. In confinement, the Greenfinch imitates the song of any fellow-captives, and without many qualities to recommend it as a cage-bird, soon becomes tame and reconciled to its prison.

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* *Loxia chloris*, Linnæus, Syst. Nat. Ed. 12, i. p. 304.

I have been favoured by a lady with an interesting account of a young bird of this species which flew on her shoulder whilst walking, and became in a few days very familiar, not to say, affectionate and playful. It lived for about five months in a state of semi-voluntary captivity, but on the return of its mistress from an absence abroad, it appeared to have forgotten her, though it had before displayed unequivocal marks of attachment to her, and seems then to have met the sad fate that in one form or another is the usual lot of all pets on the first temporary and even unintentional discontinuance of special care for their safety.

It is rather a late breeder; not beginning to build till towards the end of April or early in May. The nest is placed in low bushes or hedges, and sometimes in trees, and composed on the outside, of coarse fibrous roots, interwoven with wool and green moss, and is lined with finer roots, horsehair and a few feathers but for that of a Finch the structure wants neatness, if it may not be called clumsy. The eggs are from four to six in number, white or pale french-white, blotched, spotted and speckled chiefly near the larger end with dark reddish-brown and purplish-grey; the markings being often disposed in a zone: they vary much in shape, being often greatly elongated, and measure from ·97 to ·68 by from ·57 to ·53 in.

The young are fed from the first entirely upon soft seeds, and by thus destroying countless weeds this species does good service to the gardener and farmer. As the season advances the broods support themselves in company with their parents on vegetable diet—not always of a harmless kind. Later still they unite in flocks, and consorting with Buntings and other Finches, feed in corn-fields and stubble, till the privations of winter drive them to the barn-door and stack-yard. They generally roost in evergreen trees or shrubs, constantly returning to the same spot, and, as Selby has remarked, before retiring for the night, they quit the company of their associates and make many ringing flights round their resting station—a habit however which is common to several other kinds of birds. A partial separation of the sexes is observable in winter though not to the same extent as in the Chaffinch.* A considerable immigration to the Eastern Counties takes place every autumn, but whether the strangers are of foreign extraction, or bred in the northern parts of this island is unknown.

The Greenfinch is plentiful in all such cultivated parts of Great Britain and Ireland as are adjacent to gardens and small woods. Of late years it has been found in several of the Hebrides, where it was said not formerly to exist, and it may possibly occur in most of them. It is a winter-visitant to Orkney, and though until recently exceedingly scarce in Shetland has now earned the same character in that group of islands. It has likewise appeared several times in winter in the Færoes, but only since the year 1865. In Norway it breeds so far as Nordland; and, though in most districts a summer-visitant, large flocks are said to winter in the southern lowlands. In Sweden its northern range does not seem to be so extensive, but it is common in the central and southern parts. It occurs pretty generally, though sparingly, throughout Finland, excepting in the north, and is thought occasionally to winter there. The same may be said of it in Russia, but it appears to become rare on the eastern slopes of the Ural mountains, and not to shew itself further in Siberia than the river Ob*, nor has it been met with beyond the Talgyche mountains in the Caucasus. In South Russia it is said to be rare in summer, though a common bird of double-passage. Yet it would appear to breed in Asia Minor, and is abundant in some parts of Palestine in winter, disappearing however in spring. In Greece it remains all the year round, its numbers receiving a great increase in winter; but it is not known to cross the Mediterranean towards its eastern end. In Algeria it breeds plentifully, and is found also in Morocco, but the birds which inhabit North-Western Africa, being somewhat smaller in size and rather brighter in plumage than their European brethren, have been recognized by some ornithologists as forming a distinct species, named by Dr. Cabanis *Ligurinus aurantiiventris*. Mr. Dresser, however, after examining a large series of specimens and availing himself of the experience of the more modern Mauritanian and Iberian travellers, thinks that this specific distinction cannot be maintained. It has been observed as a straggler to Madeira, and both in Portugal and Spain it is common all the year round, while throughout the rest of Europe its distribution needs no further remark.

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* Neville Wood (Brit. Song Birds, p. 387) states that each nest usually, though he cannot say always, contains birds of the same sex, and that the same is the case with a few other species of the family. This assertion however requires corroboration before it can be accepted.

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* Pallas says it occurs in Kamchatka, and in the islands to the eastward, but there is little doubt that he was herein mistaken, and that the bird sent to him from the former locality was one of the two allied, but yet distinct species inhabiting Eastern Asia and its adjacent islands, the smaller of which—the *Fringilla sinica* of Linnæus—was observed by Prof. Radde on the Amoor. Herr von Kittlitz also, the naturalist of a Russian Expedition, in 1827, to the Pacific, fell into the same error, stating (Mém. Acad. Petersb. par Sav. étrang. i. p. 241) that he found *F. chloris* rather numerous on the coast of Boninsima – an island between four and five hundred miles east of Japan; but in the account of his voyage, published in 1859 (Denkwürdigk. u.s.w. ii. p. 182), he corrected the mistake and referred his bird to the *F. kawarahiba* of Temminck, the larger of the two species above spoken of.

The male has the bill of a dull flesh-colour, darkest at the tip: the irides hazel: the lores dusky-black; the forehead golden-green; the crown of the head, neck, mantle, scapulars and back, olive-green clouded with hair-brown; the upper and least wing-coverts bright golden-green, the outer edge of the wings gamboge-yellow; the wing-quills blackish-brown, tipped with brownish-grey,—the tertials bordered broadly with hair-brown, the secondaries narrowly with olive-green, and the primaries with brilliant gamboge-yellow, for the basal two-thirds of their length; the rump and upper tail-coverts bright golden-green; the two middle tail-quills blackish-brown bordered with brownish-grey; the rest have the basal half gamboge-yellow, the terminal part blackish-brown edged with brownish-grey: the sides of the head and ear-coverts ashy-grey mixed with green; the chin, throat and breast, bright golden-green, clouded with ashy-grey and passing into gamboge-yellow on the belly; the vent white tinged with yellow; the lower tail-coverts straw-coloured, mixed with white; the sides of the body and the thighs light brownish-ochreous; the lower wing-coverts and the lower surface of the basal half of the tail-quills pale yellow: legs, toes and claws, pale wood-brown.

The whole length of an adult male is six inches or a little more; from the carpal joint to the end of the wing, three inches and a half: the second, third and fourth primaries very nearly equal; the fifth an eighth of an inch shorter than the fourth, and the sixth a quarter of an inch shorter than the fifth: the tail very decidedly forked.

In the female, which is a rather smaller bird, the bill is pale brown; the upper plumage generally hair-brown, tinged only with golden-green on the upper and least wing-coverts and on the rump; the yellow edging of the primaries and base of the tail-quills remains, though it is less bright; the throat, breast and belly, pale brown, the last tinged with greenish-yellow; lower tail-coverts dull white.

Young birds in their first plumage are generally of a light ochraceous-brown with clouded spots of darker-brown above, and beneath especially, on the throat, breast and belly with elongated brown patches a few clouded spots are also to be seen on the back.

Young males after their first moult are intermediate in the general tone of colour between that of the adult male and the female, but the yellow colour on the primaries does not extend so far along each feather.*

The vignette represents the nest of the Hawfinch.

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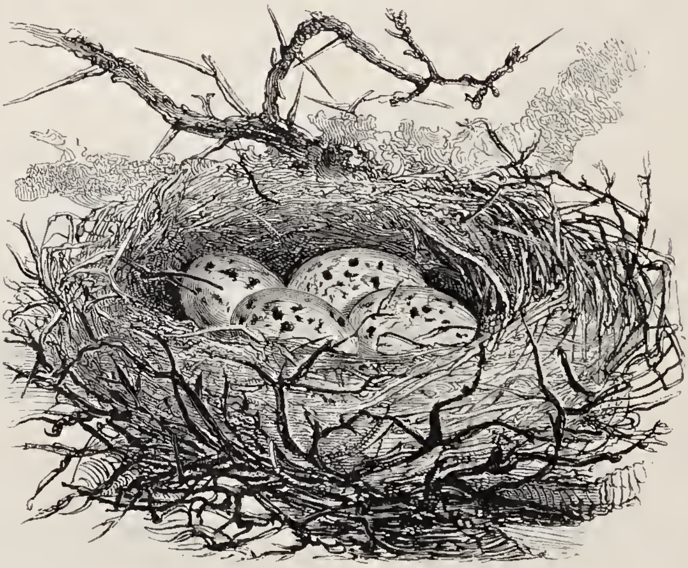
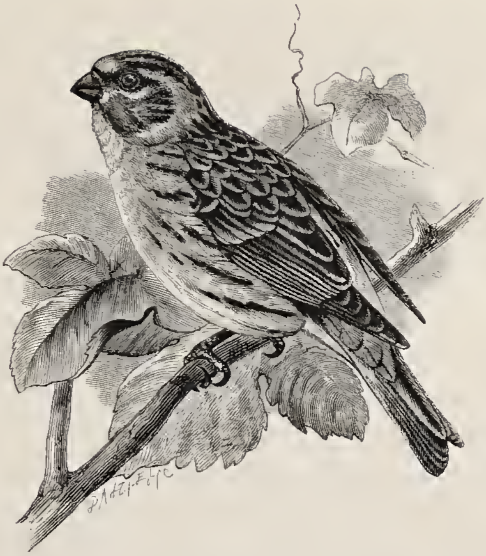
* It is not intended here to disturb the generic divisions of the *Fringillidæ* adopted in former Editions of this work. To do so satisfactorily would require a closer study of the family as a whole than is now in the power of the Editor to prosecute. He however thinks it right to say that he believes the inclusion of the Greenfinch in the genus *Coccothraustes,* of which the Hawfinch is the typical if not the only species, to rest upon superficial grounds, and would decidedly prefer the separation of the Greenfinch therefrom. In this case the generic term *Ligurinus,* bestowed by Koch in 1816 (Säugth. u. Vög. Baierns, p. 229), takes precedence of *Chlorospiza* given by Bonaparte. That of *Chloris,* applied by Cuvier in 1800 (Leçons d'Anat. Comp. tab. ii.), has been objected to from its similarity to the *Chlora* of botanists, but if it be used another specific term needs to be found, and accordingly that conferred by Swainson in 1837 (Hist. and Classif. of Birds, ii. p. 281) should be added, and the species will then stand as *Chloris flavigaster*—for the various epithets by which the eldest Brehm had previously tried to distinguish the indistinguishable "*subspecies*" of this bird should be disregarded by every one who has at heart the simplification of nomenclatural puzzles.





SERINUS HORTULANUS, K. L. Koch*.

THE SERIN.

SERINUS, K. L. Koch †.—Bill hard, strong, short, somewhat conical, but very broad at the base and with the distal half suddenly diminishing to the tip; mandibles nearly equal in size, but the upper a little longer than the lower; edges plain. Nostrils basal, supernal, round and hidden by projecting and recurved frontal plumes. Gape straight. Wings with the first primary so small as to seem wanting; the second, third and fourth nearly equal, but the third a trifle the longest—none of them however much surpassing the fifth, which on the contrary is considerably longer than the sixth. Tail moderate, rather deeply forked. Tarsus slender, and shorter than the middle toe, scutellate in front, covered at the side by a single plate. Claws small and rather weak.

THE SERIN, a Finch closely allied to the Canary-bird and long known to inhabit many parts of Europe, has of late years been observed to be extending its range on the continent, and, as in such a case might well be expected, has appeared in England. The first recorded example is that by Mr. W. Hazel ‡ (Nat.

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* Säugthiere und Vögel Baierns, p. 229 (1816). If however this species be rightly identified with the *Fringilla flaveola* of Linnæus (Syst. Nat. Ed. 12, i. p. 321) that epithet of course has priority over Koch's.

† *Op. cit.* p. 228.

‡ This gentleman seems to have been very fortunate in announcing the appearance in England of exotic Finches. In the same note in which he, almost

1853, p. 20), who said that a male was caught, in April 1852, near Eastney Fort, about a mile from Portsmouth, and having been paired with a hen Canary-bird produced a brood of mules, which unfortunately deceased. On June 20th, 1859, as recorded by Mr. Bond (Zool. p. 7105), a Serin, believed to be a female, was caught near Brighton and taken to Mr. Pratt of that town, while Mr. Rowley stated (Ibis, 1861, p. 113) that he had been told of three other examples of the species, taken by Brighton birdcatchers and cast aside from ignorance of their value. Mr. Bond also in the same communication mentions having seen a male captured soon after the severe storm in October, 1859, near London. Mr. Cecil Smith (B. Somers. p. 180) states that in January or February, 1866, he was shewn an example said to have been shot at Taunton, which passed into the possession of Mr. Byne, of Bishop's Hull, and was by him submitted to Mr. Gould's inspection. Mr. Monk announced (Zool. s.s. p. 229) the capture, at Hove near Brighton, on April 19th, 1866, of a hen Serin, which he saw alive a few hours afterwards, and this, with another of those obtained in that neighbourhood, is now in his collection, where, thanks to his kindness, the Editor has seen them. Mr. Bond too recorded (Zool. s.s. p. 1984) another example which he saw at a bird-stuffer's at Brighton, taken, he was told, in April 1869. This is very likely the same as one noticed, according to Mr. Harting (Handb. Br. B. p. 112), by Mr. Lucas as obtained at Worthing on May 4th in that year—though, as will be seen, the dates do not agree. On April 16th, 1873, a hen, which was afterwards brought to the Editor by Mr. Borrer, was procured at Brighton and is now in his collection.

In regarding all these occurrences it must, however, be

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incidentally, mentions the first occurrence of the Serin, he stated that he possessed an example of *Crithagra chrysopyga* (a West-African bird) taken near Portsmouth, and also that a specimen either of *Passer hispaniolensis* or of *Petronia stulta*—he seems uncertain which—was killed a few years before, about five miles from that place, and was then in the Museum of its Philosophical Society. Notice of this last, he added, he sent to the Author of this work, but as he did not think fit to include it in his last Edition, the present Editor deems it unnecessary to give the statement any further attention.

borne in mind that the Serin is a very popular cage-bird on the continent, and has doubtless often been imported to this country, where if one escaped it might easily subsist for a longer or shorter time. On the other hand, must it be remarked that the majority of examples recorded have occurred in spring—the very season when a species like this would in all probability reach England—and the dates accordingly point to its appearances as voluntary acts. The steady progress, mostly in a northward direction, which on the continent this bird has of late years been making is attested by so many trustworthy naturalists that it must be taken as fully established, and since this fact has been especially observed in Germany—a country wherein ornithology has for so long a time been carefully studied—the less hesitation should be felt at its acceptance. The evidence is too long for a summary of it even to be inserted here.* Enough to say that there are many districts in which the species is now common, though within but a few years it was rare, if not entirely unknown in them.

Of English ornithologists few have enjoyed better opportunities of becoming acquainted with this bird than Mr. Dresser, who has studied its habits in Western Germany, in Styria, and in Spain. The following is the account which he gives of them in his admirable 'Birds of Europe.'

"The Serin Finch inhabits the foot of the mountains skirting the plains, but does not appear to affect the plains themselves; nor is it found in the mountains, being there replaced by the Citril Finch†. It is usually to be met with in the orchards and gardens and in the vineyards, frequently in gardens which are surrounded by houses, in which last locality it is tolerably tame—though, so far as my own experience goes, it is very shy and difficult of approach outside the town. During the fortnight I spent at Staufen in Breisgau (Baden), in June last [1875], I never got within range of one outside the town, though on several occasions I saw and heard it. In the town itself I several times saw specimens; but as they doubtless had nests in the neighbourhood, and as, besides, it would not well do to shoot in the town, I did not obtain a specimen. It may easily be recognized by its call-note and flight. The former somewhat resembles that of the Canary, but may easily be distinguished by any one who has heard it. Its song is poor, and lacks both depth and melody, being merely a continuous twittering warble, generally uttered, it would seem, as the bird is seated on the topmost spray of some tree, usually a fruit-tree. Its flight is exceedingly swift, and may not inaptly be compared to that of a Sand-Martin, which it far more nearly resembles than that of any other Finch. It sometimes sings whilst on the wing; that is, it will fly up from the spray on which it has been seated like a Tree-Pipit, and will continue its song during the short time it is in the air.

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* The chief recent authorities for this and several other points of interest are Herr Julius Hoffmann (Naumannia, 1852, iii. pp. 58–64), Capt. von Homeyer (Journ. für Orn. 1862, pp. 97–106 ; 1867, p. 287 ; Zool. Gart. 1868, pp. 199–202), Dr. Rohnhert (Journ. für Orn. 1864, pp. 396–398), Pastor Jäckel (Zool. Gart. 1868, pp. 405–408), Dr. Liebe (Journ. für Orn. 1875, p. 206) and M. Nérée Quépat's 'Monographie du Cini' (Paris : 1875).

† This species also is said to have occurred in England, but through a mistake (Zool. s.s. pp. 1984, 2022).

"It feeds chiefly on seeds of various kinds; at least all those I have at different times shot, and the contents of whose stomachs I examined, had been feeding on these alone—grass-seeds and those of the various wild plants and weeds, chiefly such as are oily; and it appears always to shell the seeds and discard the husks before swallowing them. It seeks after food in fields, gardens, and especially in the vineyards, in which last it is usually to be found.

"The nest is a very neat, compact little structure, very carefully made and neatly shaped. It is built of fine roots and grass-bents, and neatly lined with feathers and horsehair. The outer portion of the nest appears to be interwoven with spiders' webs; and a few bits of lichen and grey moss are affixed here and there. A nest in the possession of Mr. Carl Sachse, taken near Frankfort, is built in the fork between three upright small branches of a lilac tree, and is constructed entirely of fine grass-stems and rootlets, intermixed with cotton and woollen threads. These latter are utilized more especially to bind the structure to the branches, which is most effectually and strongly done, one of the branches being encircled at least a dozen times with a long piece of tolerably stout woollen thread. The lining consists merely of somewhat finer grass-stems than those used in the construction of the exterior portion."

The eggs, said to be four or five in number, measure from ·63 to ·6 by ·49 to ·45 in., and are of a pale greenish-white, or suffused with light reddish-brown so as to appear of a yellowish cream-colour, on which are blotches, spots and specks of a dark reddish-brown—sometimes nearly black.

This species is but rare in Belgium* and as yet does not seem to have bred nearer to us than Luxemburg. A single example has been obtained in Heligoland and two in Sleswick; but it is rarely if ever to be met with in North Germany, and it does not become common till we ascend the Rhine to Mainz. In that neighbourhood however and around Frankfort-on-the-Maine, it is in summer pretty plentiful. Passing over Thuringia and most part of Saxony, where it does not seem to appear, it has of late years shewn itself abundantly in Lusatia and Silesia. Thence to the south-east it is common in Bohemia and Galizia, but rare in Transsylvania; nor is it very frequent in Bulgaria, though it becomes more plentiful in Bessarabia and Roumelia, and in Greece—where it is said to be resident—it is common, as it also is in Asia Minor and Palestine—but in the last it is only found in winter and near the sea, while a nearly allied species, *S. aurifrons*, takes its place as a resident. It has, however, been observed in Sinai and in Egypt as far as Cairo. In North-Western Africa from Tunis to Morocco, it is much more abundant, and at Tangier immense flights cross the Strait of Gibraltar in spring and autumn. Nevertheless a considerable number remain to breed in Algeria. In winter it would seem to visit all the islands of the Mediterranean from the Balearic group to the eastward. It is found in Portugal and is numerous and resident in many parts of Spain, as well as throughout the southern and central parts of France; but further to the northward, except towards the German frontier, it is only a straggler. In Italy it is generally distributed, but partially so in Switzerland, though said to breed yearly and commonly about Geneva. As before intimated it is abundant in South Germany, especially on the Upper and Middle Rhine, and the same is the case in the Austrian dominions.

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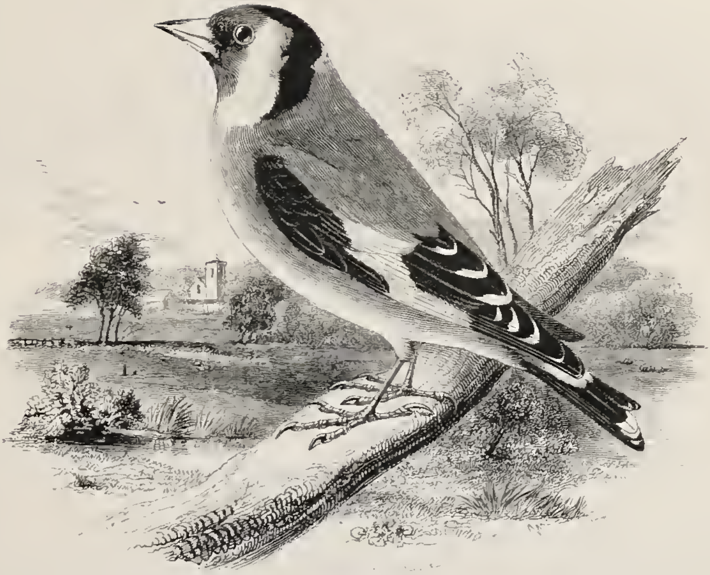
* Temminck's assertion as to its occurrence in Holland is probably (as Mr. Labouchere suggests to the writer) explained by the fact that in his time the name of that country in common speech included what is now known as Belgium. The bird, which Faber killed at Husavík in Iceland and referred to this species, was most likely a young Redpoll, yet there have been ornithologists who recognized in the specimen, which they never saw, a new species!

The cock has the bill horn-coloured, with the lower mandible paler: the irides dark brown: immediately above the nostrils is a transverse line of dull greyish-olive, which, excepting a patch on the forehead and a streak above and below each eye of bright gamboge-yellow, is the prevailing colour of the head, ear-coverts and neck—being mixed however with yellow on the nape; the mantle and back are dark greyish-brown, each feather being more or less broadly edged with yellow; the least wing-coverts are blackish-brown tipped with yellow; the rest with the quill-feathers, both of wings and tail, greyish-brown, narrowly bordered with primrose-yellow, which on the tertials is broader but inclining to greyish-buff; the rump is bright gamboge-yellow; the upper tail-coverts blackish-brown with yellow edges; the chin, throat, sides of the neck beneath the ear-coverts, and breast, are bright gamboge-yellow, streaked on the sides of the breast and flanks with blackish-brown, and paling on the belly which, with the vent and the lower tail-coverts, is white; the inner wing-coverts are greyish, tinged with yellow: the legs and toes pale brown, the claws darker.

The hen is very similar, but has much less yellow, and that not so bright in tint; the middle wing-coverts also are edged with pale buff. In winter the yellow of the cock, especially on the head, is much obscured by greyish-olive, and on the wing-coverts inclines to pale buff.

The whole length is about four inches and a half; that of the wing from the carpal joint two inches and four-fifths.



CARDUELIS ELEGANS, Stephens*.

THE GOLDFINCH.

Carduelis elegans.

CARDUELIS, Brisson†.—Bill hard, nearly conical but slightly compressed, the point slender and sharp. Nostrils basal, lateral, round, and hidden by projecting and recurved plumes. Gape slightly curved. Wings rather long and pointed; the first primary finely attenuated and so small as to seem wanting; the second, third and fourth nearly equal, but the second the longest. Tail more or less moderate, and forked. Tarsus short and rather stout, scutellate in front, covered at the side by a single plate. Claws moderate.

THE genus *Carduelis*, founded by Brisson to receive the Goldfinch and some other birds, has been pretty generally adopted by naturalists, though many have still further subdivided it.

Gay plumage, lively habits, an agreeable form and song, with an endearing disposition, are such strong recommendations, that the Goldfinch has been, and will probably long be, one of the most favourite cage-birds. So well does this species bear confinement that it has been known to live ten years in captivity, continuing in song the greater part of each year.* For some centuries there have been persons who have amused themselves with teaching it a variety of tricks, the commonest being that of drawing up water for its own use in a toy bucket†, or of raising the lid of the box which contains its food, while still greater ingenuity has been wasted in teaching it feats of a character far more unnatural‡, and therefore to a naturalist eminently distasteful. All these qualities, combined with the ease with which it can be caught, render the Goldfinch one of the most important subjects of the bird-dealer's traffic, and the number netted —chiefly in the southern counties—in autumn and spring is enormous. Mr. Hussey in 1860 (Zool. p. 7144) put the average annual captures of this species near Worthing at about 1154 dozens—nearly all being cock-birds—and it would seem that a still larger number used to be yearly taken within ten miles of Brighton, where, according to Mr. Swaysland (a witness before the Committee of the House of Commons on Bird-Protection), a boy could catch forty dozens in a morning. In that neighbourhood, however, it has now become comparatively scarce owing, in part, to the fatal practice of catching the birds prior to or during the breeding-season, and not an hundred may be seen even at the most favourable time of year.*

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* Gen. Zool. xiv. p. 30 (1826).

† Orn. iii. p. 50 (1760).

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* Gesner, not on his own authority however, tells of one which was *twenty-three* years old !

† From this fact the bird is fancifully known in some parts of England as the "Draw-water"; but its commonest local name perhaps is "King Harry" or "Redcap," while in some of the Midland counties it is termed "Proud Tailor." In Sir T. Browne's time it seems to have been known as a "Fool's coat."

‡ Syme, writing in 1823, states (Treat. Br. Song-Birds, p. 182) that a few years before a certain Sieur Roman exhibited a number of trained Finches (Goldfinches, Linnets and Canaries) which enacted some wonderful parts :—One seemed dead, and was held up by the tail or claw, without exhibiting any sign of life ; a second stood on its head with its claws in the air ; a third imitated a Dutch milk-maid going to market with pails on its shoulders ; a fourth mimicked a Venetian girl looking out of a window ; a fifth appeared as a soldier, and mounted guard as a sentinel ; a sixth acted as a cannoneer, and, with cap on head, firelock on shoulder and match in claw, discharged a small cannon. The same bird also feigned to have been wounded, and was wheeled in a barrow, to convey it, as it were, to the hospital ; after which it flew away before the company. A seventh turned a kind of windmill ; and the last stood in the midst of some fireworks which were discharged all round it, without exhibiting the least symptom of fear. In our own time other "performing" birds have brought their masters much gain and passing credit from a foolish public. The only thing which can reconcile the naturalist to witnessing such displays, violating the laws of nature as they do equally with that melancholy exhibition ironically called the "Happy Family," is the apparently well-founded belief in the docility of the Goldfinch being so great that little if any cruelty is required to "perfect" its education.

In spring, and early summer, the Goldfinch frequents gardens and orchards. Hurdis wrote:—

> "I love to see the little goldfinch pluck
> The groundsil's feather'd seed, and twit and twit;
> And then in bow'r of apple blossoms perch'd,
> Trim his gay suit, and pay us with a song.
> I would not hold him pris'ner for the world."
>
> *Village Curate* (1788), p. 44.

The Goldfinch builds a very neat nest, generally in an apple- or pear-tree, but very frequently near the end of a leafy bough of a horse-chestnut or sycamore; and more seldom in a hedge, a thick bush in a copse, or an evergreen in a shrubbery. A nest before me is formed on the outside with fine twigs of fir, green bents, fine roots, wool, and pieces of white worsted, interwoven together; and is lined with willow-down, feathers and numerous long hairs.†

The eggs are four or five in number, of a french white, with a few spots and lines of pale purple and dark reddish-brown, but occasionally boldly and much more marked or partly suffused with brownish-purple; they measure from ·72 to ·6 by from ·53 to ·47 in.

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* Report from the Select Committee on Wild Birds Protection &c. Ordered by the House of Commons to be printed, 23 July 1873, pp. 102–108.

† It has been well observed that "birds will in general take the materials for building which they can most easily procure." Bolton says (*Harmonia Ruralis*, pref. p. vi.): —"On the tenth of May, A.D. 1762, I observed a pair of goldfinches beginning to make their nest in my garden; they had formed the groundwork with moss, grass, &c. as usual, but on my scattering small parcels of wool in different parts of the garden, they in a great measure left off the use of their own stuff, and employed the wool; afterward, I gave them cotton, on which they rejected the wool, and proceeded with the cotton; the third day I supplied them with fine down, on which they forsook both the other, and finished their work with this last article. The nest, when completed, was somewhat larger than is usually made by this bird, but retained the pretty roundness of figure, and neatness of workmanship, which is proper to the goldfinch. The nest was completed in the space of three days, and remained unoccupied for the space of four days, the first egg not being laid till the seventh day from the beginning of the work."

The young are said to be fed for a time with caterpillars and other insects, and, when able to follow their parents, they rove together in small flocks over commons and uncultivated lands to feed on the seeds of the thistle, burdock and dandelion, with chickweed, groundsel and plantain. While thus engaged, they may be seen clinging in all positions to the stems, picking out their favourite portions. If approached too near, the little party, one by one, move off to the next patch, with undulating flight, twittering as they rise, and one may with Grahame say of each,

> —— "and see him stretch his wing,—
> A fairy fan of golden spokes it seems."
>
> *Birds of Scotland* (1806), p. 49.

Thus they fare through autumn and winter, living chiefly on various seeds, particularly those of the different kinds of syngenesious plants [*], and do good service to the agriculturist by consuming the prolific source of many a noxious weed.[†] Knapp says that in spring the Goldfinch picks out the seeds from fir-cones, and Thompson remarks that he has observed, though very rarely, remains of coleopterous insects in its stomach, in which fragments of stone or brick were always present.

The Goldfinch breeds regularly in almost every English county, Northumberland perhaps excepted. Throughout Great Britain, however, it is a regular though partial migrant. To this fact Neville Wood in 1839 was, perhaps, the first to draw attention (Br. Song-Birds, p. 364), and the late Mr. Newman (Zool. p. 984) afterwards strongly insisted on it, shewing that the bird absolutely disappeared from Herefordshire in winter. It is singular that nearly all ornithologists had omitted to notice what birdcatchers had known from time immemorial, but the fact has latterly been recognized by unprofessional observers, and by no one more fully than Mr. Knox (Orn. Rambles, Lett. vii.). In most parts of England, where sufficient food exists, some Goldfinches pass the winter, but the bulk of them—their numbers being increased by foreign arrivals in our Eastern Counties—depart in autumn toward the south coast, and on reaching the seaboard move mostly to the eastward till the opposite shores of the Channel become visible from the Kentish cliffs, and thither they fly. Of those that remain with us, it may be said that they are nearly always shifting their ground—the quest of food probably urging their movements, though impatience of extreme cold, from the direct or indirect effects of which they suffer much, has most likely also to do with their flittings. Spots indeed there are, neglected by the agriculturist, wherein some may be seen even at the dreariest season of the year, but those that abide in this country in winter bear no comparison, in point of number, with those that seek their fortune abroad.

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[*] Prof. Steenstrup has noticed (Vidensk. Meddelelser Naturh. Foren. 1863, pp. 373-377) two singular traits in this bird's habits, as observed in Denmark, which seem to have not been before recorded. The first is that it frequently attacks a twig of lime or willow, and, dexterously stripping off the bark with its pointed bill, devours the inner tissue, leaving the shreds of the bark hanging down. The second is that, when feeding on a bough the sprays of which are not individually stiff enough to bear its weight and give it a firm footing, it grasps several of them and, forming them as it were into a faggot, is thus enabled to maintain a hold sufficiently steady for its purpose.

[†] This is however denied by M. Quépat in his 'Monographie du Chardonneret' (Paris: 1873).

The diminished numbers of this species, owing to so many being netted for cage-birds at or about the breeding-season, has already been noticed, but there is probably a far stronger cause of its growing scarcity throughout the kingdom. This is the continually increasing cultivation of waste lands, and the extirpation of weeds from those already under tillage or used as pasture, essential to the system of high farming which has of late years conferred so many benefits on the nation at large. To expect any change, except for the worse as regards the Goldfinch, were vain, yet well-directed legislative measures to preserve the remaining commons from enclosure may, in England at least, put off the evil day in which there shall be no more any Goldfinches to gladden the eyes and ears of the rambler,* and, seconded by judicious restrictions on the season when these birds should be caught, might ensure to future generations sights and sounds otherwise only to be read of in works of this and preceding time. Conclusive evidence as to the baleful effect of improved cultivation on Goldfinches has been given by many observers, and by none better than Mr. Hepburn, who, writing (Zool. p. 300) in 1843 of East Lothian, "where they were once as plentiful as sparrows," says:—"Grey-headed ploughmen talk of their services among the thistles, and other weeds in the outfield; but infield and outfield, the wretched agricultural practices of the olden times, have alike passed away, and with them this bright finch, which is now only known as a rare straggler." Here we have, we may hope, an extreme case, but something like it has doubtless been long going on almost every where in the island.

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* The "acclimatizers" who have introduced the bane of thistles and ragworts

It is still found, however, throughout Scotland to Sutherland—suitable localities, which in many parts are but few and far between, being of course understood.* The like may be said of Ireland, where, though inhabiting all four provinces, it is by no means generally distributed, and, according to Thompson, is capricious in its appearance, deserting, without obvious reason, places which it formerly frequented. Precise details of its distribution, especially as regards the south-west, are wanting, but the same author says that Cushandall in Antrim is its stronghold in Ulster, Mr. R. Warren records it as resident and common about Killala Bay, and Mr. A. L. Sinclair informs the Editor that it is very common in Donegal in winter, though rare in summer. It is not known to visit either Orkney or Shetland. In Norway it is not with certainty known to breed further to the northward than lat. 64½°, and that only here and there, but in Sweden it does not seem to extend beyond Upsala, being however common in the south. In Finland it would appear not to have been observed till 1840, and not yet to have occurred except in a few spots on its southern coast.

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to our antipodes might be compelled to carry thither their antidote in this pleasing bird; and the fines, incurred by those who suffer the former to grow on their property, might be worse spent than encouraging the propagation of the latter.

* According to Don (as quoted by Mr. R. Gray) the hard winter of 1813 inflicted a loss upon the species which it never recovered, and Weir informed Macgillivray that many perished in the deep snows of 1823.

In Russia on the contrary it has penetrated to Archangel, though but rarely seen there; it is however very common on the southern steppes. It is not known from Siberia, but is pretty common in Circassia. It reaches Turkestan and has been obtained by several naturalists in Persia. In Asia Minor, from Trebizond to Smyrna, it is common and resident, and has been met with in Palestine. In Lower Egypt it is rather abundant in winter, but does not ascend the Nile-valley, it is said, above Cairo. It is plentiful in most parts of Algeria and Eastern Morocco, and there are places in the Tell, indeed, in which Mr. J. H. Gurney says it is the commonest bird, while it extends its range to the Canaries and Madeira. Throughout the whole of Europe, it is more or less universally distributed in suitable localities, and according to Col. Irby is the most common bird in Southern Spain.

The bill is nearly white tinged with pink and tipped with black : irides dusky brown : a thin line over the nostrils, and the lores, black; forehead bright, glossy crimson-red extending to behind the eyes; crown and back of the head black, whence a band of the same descends on each side of the neck; nape below this band buffy-white; back, scapulars and rump, wood-brown; lesser wing-coverts black, but in winter often broadly tipped with buffy-white; greater wing-coverts and the outer web of the basal half of each primary after the second, brilliant gamboge-yellow; the remaining portion of the primaries, and all the other wing-quills black, tipped with white, which on the tertials becomes buff in winter; upper tail-coverts greyish-white tipped with wood-brown; tail-quills black—the two outer feathers on each side with an irregularly shaped spot of white on the inner web and the rest tipped with buffy-white; chin and fore part of the cheeks, bright crimson-red; the rest of the cheeks and ear-coverts white, clouded on the latter with dull brown; throat and lower parts dull white, more or less deeply tinged on the sides of the breast, body and flanks, with wood-brown; lower under wing-coverts white, except those of the carpus which are blackish : legs and toes pale flesh-colour; claws brown.

The whole length is five inches; from the carpal joint to the end of the wing, two inches and seven-eighths: the fourth primary one-eighth longer than the fifth, which is considerably longer than the sixth.

In the female, the bill is usually more slender, the red on the head occupies less space, and is frequently speckled with black; but in colour both sexes are generally much alike.

In young birds of the year, called by bird-fanciers Greypates and (as with those of other species) Branchers, the head, neck, back, and sides of the body are greyish-brown clouded with a darker shade; the primaries and tertials are tipped with buffy-white, and only the outer tail-feather on each side has a white spot. The black on the head begins to appear about the middle of September, and the red at the end of that month, but it is some time before the head assumes its perfect colouring.

The Goldfinch is subject to some variation both in size and plumage, and, though of the ordinary aberrations in colour observable in it, as in other birds, there is no need here to speak, a few lines may be bestowed upon one variety long known among bird-fanciers as the "Cheverel*" or "Chevil," and by them regarded not only as a distinct "species" (which of course from a technical point of view is wrong), but also as of great value—according to some, because it is believed to have a sweeter song, while others say because it pairs more freely in captivity with the Canary-bird. What is deemed a true Cheverel is very rare, and has the chin wholly white, with the white of the sides of the head extending upwards in a well defined line through the black band and across the occiput

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* The bird is said by Pennant to be so called "from the manner in which it concludes its *jerk*" or song. Mr. Skeat has been so good as to suggest that the name has a common origin with *chefle* (Ancren Riwle, *circa* 1200, Ed. Morton, p. 128) otherwise *cheuelen*—an old English word meaning to "talk idly," to "chatter"—whence would regularly come *cheveller*, a "chatterer," easily corrupted into Cheverel and Chevil—the latter being the form most used nowadays. Mr. Mase, a Brighton bird-fancier, with whom the Editor had the pleasure of becoming acquainted, informed him, however, that the name was derived from "Cheviot Hill"—that being the reputed capital of the supposed "species." It may be remarked that Cheverel, as applied to the Goldfinch, has nothing to do with *cheveril* (= kid) often used by Shakespear.

—the brown patch on the side of the breast being also replaced by white. But specimens shewing almost every stage of this irregularity may be procured, from those which possess only a white "speck" on the chin to those which exhibit its full extent as just described. In the more extreme examples the bill and claws are also white—features often seen in albinescent or albino birds, and indicating the real nature of the present abnormality, which is common to both sexes and to all ages, and seems to be hereditary, for a whole family may be caught the young of which exhibit in a greater or less degree the distinguishing marks of one or both of their Cheverel parents.*

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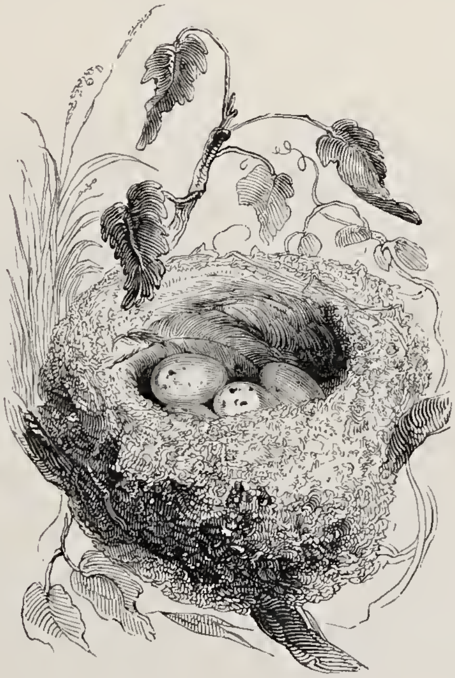
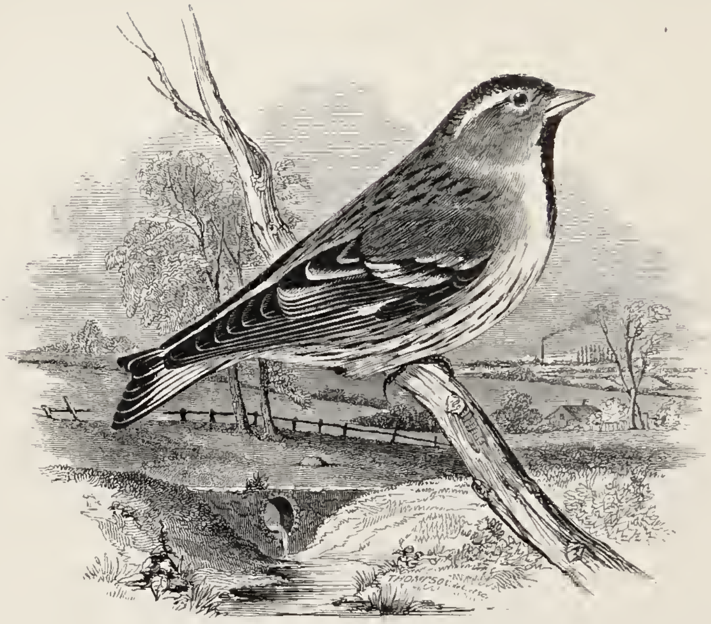
* The Editor is not aware of any portrait of a true Cheverel having been given, but ornithologists are indebted to Mr. Rowley for figuring two that are sufficiently perfect to shew the appearance of the variety (Orn. Misc. p. 91, figs. 1, 3). This gentleman has also favoured the Editor with a letter from Mr. A. Crittenden of Brighton, accompanying a coloured sketch of a still rarer and more beautiful variety, in which a crescentic patch of red appears behind the black band on the side of the neck, and it is said that the ear-coverts and breast were tinged with yellow. Those who are curious in the matter of varieties of the Goldfinch will do well to consult Mr. Blake-Knox's remarks (Zool. s.s. pp. 2050–2052).





Carduelis spinus (Linnæus*).

THE SISKIN.

Carduelis spinus.

The Siskin, or Aberdevine as birdcatchers also call it, is for the most part an autumnal visitant from the north to England, and generally departs in spring, but it is known to have bred with us, and this, according to authorities presently to be cited, even in our southern counties. In Scotland however there is now no doubt that many pairs remain and breed annually, and the same may perhaps prove to be true of the north of England. It is generally found in flocks, often in company with the Redpoll, to be hereafter described, and not uncommonly in large numbers, feeding on the seeds of the alder, birch and larch, which the bird's pointed bill is an efficient instrument for extracting. Under these circumstances it frequently attracts attention by its very peculiar twittering note, serving as with the various species of Titmouse to keep the flock together while its members industriously search every cone or catkin, clinging, back downwards or in any other convenient position, to the most slender sprays in their quest. These migrant bands commonly appear towards the end of September and stay with us till April—their abode during that time being almost entirely ruled by the supply of food, and what may be a favourite haunt in one year will not be visited by a single example in another, so that the appearance of the species is, in many places, very uncertain. As spring draws on, the remarkable song of the cocks, which sounds not unlike the running down of a piece of clockwork, may be heard on fine days, as they momentarily pause from their almost incessant occupation of finding food, or chase one another with more or less anger from twig to twig. Among these flocks however the same disproportion of the sexes often observed in other assemblages of Finches is said to obtain, and occasionally, according to one observer, the hens are fifty times as numerous as the cocks.

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* *Fringilla spinus*, Linnæus, Syst. Nat. Ed. 12, i. p. 322 (1766).

Although this bird has been known to breed, as just stated, in England, the several instances of its doing so, or of its being observed with us in summer deserve particular notice. In 1852 a nest, built in a furze-bush near Affpiddle in Dorsetshire, was given by Mr. Charles Waldy, who declared he saw the bird on it, to Mr. O. Pickard-Cambridge, and that gentleman believes a nest, found soon after in a similar position at Bloxworth in the same county, to have been a Siskin's. Mr. Jeffery reports (Zool. s.s. p. 1033) that a pair built a nest and reared young in a garden at Oving near Chichester in 1867. Latham, in a note to the edition of Pennant's 'British Zoology' published in 1812, states that he received from Lewin a male and female shot in summer in the latter's garden in Kent. The late Mr. H. L. Meyer informed the Author that in 1836 two Siskins' nests, built in furze about three feet from the ground, were found in Coombe Wood in Surrey. From these the eggs were taken and hatched under Canary-birds, and as one of the nestlings was kept by Meyer for at least two years, there can in this case be no question as to the species. Subsequently, as he stated in his 'Illustrations of British Birds,' he twice took undoubted nests of this bird—one on St. Anne's Hill near Chertsey in the same county, and the other at no great distance in a hedge near the Thames. The first of these again was built in a furze-bush: the second in a white-thorn about five feet from the ground. Mr. Harting says that a pair bred near Hampstead in 1853, and that a cock-bird was taken there August 9th, 1871. The Messrs. Mathews speak (Zool. p. 2429) of frequent instances of its nidification in Oxfordshire, but herein there must surely be some error. Mr. More learned that it had been seen since in Gloucestershire in May; and Mr. Kerr records (Zool. s.s. 3410) the appearance of a flock of about twenty, almost all young of the year, in Denbighshire, August 6th, 1872, suggesting the possibility of their having been bred in the vicinity. Neville Wood mentions a pair which frequented a wood in Derbyshire in the summer of 1831, and must have been bred there. Waterton informed Mr. More that the Siskin had bred at Walton Hall, near Wakefield; and Mr. Howitt of Lancaster sent the author word that in the summer of 1836 six pairs were seen in that neighbourhood, and later in the season several of the young. Bolton, in 1794, announced his being informed that the Siskin bred in juniper-bushes in Westmoreland, but there seems to be no later observation of the bird as indigenous to that locality. Mr. Dale records (Zool. pp. 2188, 2189) his finding a nest with four eggs, near the top of a tall spruce-tree at Brancepeth in Durham, May 8th, 1848; and early in the following July, according to Mr. Hancock, Mr. Robson met with a flock near Swalwell in the same county; while Mr. Storey says (Zool. s.s. p. 4420) that he obtained a cock-bird in 1874 which had been taken from a nest in a fir-tree at Tudhoe near Durham the same year. In Scotland the breeding of the Siskin has been so often noticed* that any precise naming of the localities wherein it has been observed is unnecessary. Sufficient to say that it has been recorded as a more or less occasional incident in Kirkcudbright and in the counties of Dumfries, Lanark, Roxburgh, Selkirk, Haddington, Linlithgow, Fife, Forfar, Kincardine and Banff, while it seems to be a regular occurrence in those of Argyll, Perth, Aberdeen, Inverness, Elgin, Ross and Sutherland—and perhaps all the Highland shires; but it must not be supposed that the species is in summer anywhere very numerous in Scotland, except in certain favourable localities—such as are afforded by the remnants of the ancient forests, or the planted woods which of late years have almost restored to the country one of its original features. It is too quite possible that in districts like these the Siskin breeds far more commonly than is generally supposed, for the nest when built in tall trees, as is usually the case there, is hard to find and harder still to take. We may perhaps anticipate its discovery in every Scottish county. In Ireland though Thompson supposed that this bird might not impossibly breed in the county Wicklow and certain suitable localities in the north, the fact of its doing so has only been established since his time. At Powerscourt in the county just named, Kinahan saw a hen-bird July 22nd, 1852; but the nest does not seem to have been actually found in Ireland till May 1871, when Mr. R. M. Barrington, who in July 1866 had seen a Siskin close to his house at Fassaroe in that county, closely observed (Zool. s.s. p. 3915) a pair which reared their young in a nest placed near the end of a long larch-bough, some twenty feet from the ground, at the same place. In the county Dublin, Mr. Blake-Knox (Zool. s.s. p. 298) saw a pair late in March 1866, and Mr. A. L. Sinclaire informs the Editor that specimens were obtained in Donegal in August 1857; while he learns from Mr. More that on July 3rd, 1871, he saw Siskins flitting among the birch-copses which border the Upper Lake of Killarney, and others also near Kenmare—both in Kerry. Mr. Brunton further bears witness (Zool. s.s. p. 3235) to this species breeding in Antrim in 1872.

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* It is singular that Macgillivray had but a small acquaintance with this very common bird. How that came to pass cannot be explained, but the fact is plain from his own statements.

The nest of the Siskin is very like that of the Goldfinch in structure, but is perhaps hardly so neat in appearance. From what has been stated it will be seen that in England a low situation has generally been chosen for it, but undoubtedly its normal position is on a high tree as is commonly the case in Scotland and other countries. The eggs except in size almost exactly resemble those of the Greenfinch, and taken one by one can scarcely be distinguished from those of the Goldfinch, though when a series of each is compared the Siskins' have a slightly bluer tinge. They measure from ·7 to ·62, by from ·5 to ·44 in. Some little attention being paid to their needs or tastes—a green fir-branch placed in their cage being often sufficient—a pair of Siskins will generally breed freely in confinement*, to which no bird becomes sooner reconciled; but the young are not frequently reared under such circumstances, doubtless owing to the difficulty the parents have in supplying the nestlings with proper food, which is said to consist at first of *Aphides*. Siskins' eggs laid in captivity often want the dark markings which are seldom deficient in those of wild birds.

In every English county this bird is now seen more or less frequently from autumn to spring, being however rare in Cornwall and perhaps commoner in the north of the kingdom than in the south. Its tame and engaging disposition make it a great favourite in the cage, and it is usually much sought after by bird-catchers, with the greater eagerness perhaps since when it appears it seldom stays very long in one place, but moves off so soon as the supply of food becomes exhausted. Under the name of *Luteola*, which is Englished Siskin, it was well described as a bird of this country by Turner in 1544, but he said it was rare and scarcely ever known out of a cage, though he himself had once seen it in Cambridgeshire. Even at the beginning of the present century many of our ornithologists seem to have had but little personal acquaintance with it, and Montagu, who had the widest experience of them, says he had only met with a single example at large. Throughout Scotland and Ireland it appears very generally, but there is a belief that in the former its numbers are diminishing, and in the latter it is certainly scarcer than in Great Britain.

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* The earliest case on record of this fact in England seems to be by Mr. J. Milne in 1830 (Mag. N. H. iii. p. 440). The Editor has more than once induced these birds to breed in a small aviary. On the last occasion when they did so, he opened the cage-door so soon as the young were hatched, hoping that the parents by having their liberty might rear their offspring more readily. To his disappointment, however, the old birds never returned and left the nestlings to starve.

This species has not been recorded from Orkney, but it doubtless occurs there for it is a visitor, though rare, to Shetland in winter. In the Scandinavian peninsula it is said to breed so far to the north as lat. 67°, and is found in the mountains as high as the fir-trees grow, but in the extreme south of Sweden it is known only as a winter-bird. In Finland it seems to be more universally distributed, and, being very common throughout the summer at Kajana, most likely breeds still further to the northward, while a few may possibly remain during the winter. It is said to be common near Archangel, and, though its northern limits cannot be defined, it stretches thence to the eastward across Siberia and is found in Japan, where it is caught in large numbers for caging, being as great a favourite with the people of that country as with ourselves. In China it is found in winter at Foochow, but its southern range in Asia can no more be traced than its northern limits. All that can be said is that it is not yet known from India. It occurs abundantly about Smyrna, but does not seem to cross the eastern half of the Mediterranean. In Algeria it is said to appear but rarely and only in severe weather, but it is also recorded not only from Morocco, but even from the Canaries, where it is stated to breed. Throughout Europe as a whole it is generally distributed—most commonly as an irregular winter-migrant and often in vast flocks; but it is known to breed in many hilly districts of the south, and towards the north, as in Belgium, Holland, Denmark and Prussia, among fir-woods.

The adult male in summer has the bill orange-brown: the irides dusky brown: the lores and top of the head black; above each eye a yellow band runs backward, and a short line of the same lies below it; the cheeks and ear-coverts are yellowish-green, behind which is a dusky patch; back, nape, scapulars and lesser wing-coverts, greenish-olive streaked with black; greater wing-coverts brownish-black, tipped with yellow; wing-quills dusky black, their outer web narrowly edged with yellow, except near the base where the whole of it is yellow—the inner web of the primaries is also of a greyish-white tinged with yellow; rump yellow; upper tail-coverts greenish-olive; tail-quills dusky black the middle pair entirely so, the rest yellow at the base, with narrow light-coloured edges; chin black; throat and breast yellowish-green, passing into greyish-white on the sides, belly, flanks and lower tail-coverts, all of which are streaked longitudinally with dusky black: legs, toes and claws, brown.

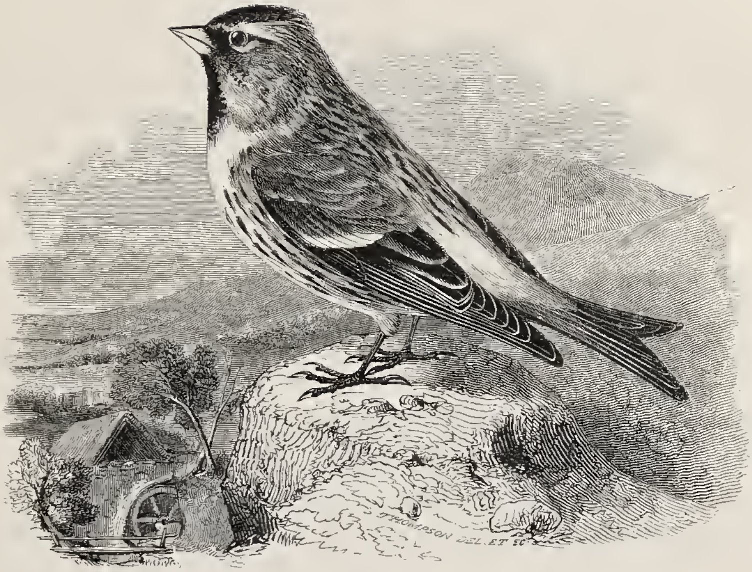
The whole length is four inches and five-eighths; from the carpal joint to the end of the wing, two inches and seven-eighths: the second, third and fourth primaries nearly equal in length, the second being rather the longest; the fifth one-eighth shorter than the fourth.

After the moult following the breeding-season, the bill is lead-coloured, the yellow of the plumage is much less bright, and the feathers of the head have brownish edges, hiding the black at the base, while the black patch on the chin is by the same means almost wholly obscured.

The female is rather smaller than the male, and wants the black crown; the head, back and wing-coverts greyish olive-brown, the lower parts greyish-white, tinged with greenish-yellow on the throat and breast, and the whole plumage except on the middle of the belly streaked with dusky black.

Nestlings are without any yellow except on the primaries and a faint tinge on the lower parts, the general colour of the plumage being a brownish-buff streaked with dull black. Young males, after the first moult, have the black feathers of the crown edged with brown, and the colours generally not so bright as those of the adults.

By many systematists this species has been separated from the genus *Carduelis* and placed in that of *Chrysomitris* suggested in 1828 by Friedrich Boie for its reception—a step in favour of which much may be urged.


THOMPSON DEL. ET SC.

LINOTA LINARIA (Linnæus *.)

THE MEALY REDPOLL.

Linota canescens †.

LINOTA ‡.—Bill hard, nearly conical, but slightly swollen; the point slender and sharp. Nostrils basal, lateral, round, and hidden more or less by projecting and recurved plumes. Gape nearly straight. Wings long, somewhat pointed; the first primary finely attenuated and so small as to seem wanting, the second, third, and fourth nearly equal, and either the second or third the longest in the wing. Tail rather long and forked. Tarsus short, scutellate in front, covered at the side by a single plate. Toes stout. Claws moderate.

THE MEALY REDPOLL, figured above, has been regarded by some ornithologists as merely a large race or variety of the Lesser Redpoll, the well-known British bird next to be described; but convenience requires the treatment of the two as entitled to distinction, and, as will presently appear, it is the smaller and with us the commoner form that, if they are accounted inseparable, should from its more limited geogra-

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[*] *Fringilla linaria,* Linnæus, Syst. Nat. Ed. 12, i. p. 322 (1766).

[†] *Linaria canescens,* Gould, Birds of Europe, pl. 193 (part xi. Nov. 1834).

[‡] Bonaparte, Sagg. Distr. metod. Anim. Vertebr. Aggiunte e Correzioni, p. 141 (1832).

phical range be considered a variety or race of the present bird, which is unquestionably the *Fringilla linaria* of Linnæus and the form to which this epithet properly belongs, though authors, through imperfect knowledge, have very generally misapplied it to the other. The difference between the two was first clearly shewn by Vieillot,[*] who in an admirable paper read before the Academy of Sciences of Turin, July 7th, 1816, very accurately described them under the respective names of *Linaria borealis* and *L. rufescens*, and rightly identified the former with the Linnæan *F. linaria* (Mem. Accad. Sc. Torino, xxiii. p. 199). This communication, perhaps from the discredit cast upon it by Temminck, has been much neglected, and to the zoologist last named is certainly due the confusion that long existed on the subject, for he at first refused to recognize the distinctness of the two forms, and when at last compelled by evidence to do so, he wrongly identified the smaller and to him best-known with the Linnæan *linaria*. Temminck's faulty course was unfortunately followed by nearly all his contemporaries, and matters were further complicated by a third form of Redpoll being confounded by him with the larger of the two that inhabit Western Europe.

The Mealy Redpoll has doubtless always been, as it still is, an irregular visitor to Great Britain, and, under this name or that of Stone-Redpoll, is believed to have been long discriminated by our birdcatchers; but Selby in 1825 seems to have first[†] published any indication of its occurrence in this country (Ill. Br. Orn. i. p. 280, note, pl. liii.** fig. 2), and he figured, from Jardine's collection, a specimen shot near Edinburgh as the large variety of the Lesser Redpoll already spoken of by Temminck. Six years later Selby ranked it as a distinct species (Trans. N. H. Soc. Northumb. &c. i. p. 263) in his catalogue of the birds of Northumberland and

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[*] It had however been recognized by De Montbeillard who in the last century spoke of the two birds, the *Sizerin* and the *Cabaret*, as distinct, though, as might be expected, he made hopeless confusion of such of their synonyms as then existed.

[†] In former editions of the present work Walcott's figure and description have been referred to the Mealy Redpoll but, as the Editor thinks, erroneously.

Durham, though without particularizing any instance of its appearance in those counties, but in 1833 he reverted to his former opinion and took it to be an "extra-sized specimen" of the hen Lesser Redpoll (Ill. Br. Orn. Ed. 2, i. p. 320, note). In 1834 Blyth made some further additions to its history as a British bird (Field-Nat. ii. p. 172), truly stating that it occasionally visited us in considerable flocks, though its appearance was uncertain; that about six years before the London birdcatchers took vast numbers, but that he had not been able to procure a single specimen since, and that the only instance of its capture known to him in the interim was that of half-a-dozen examples during the preceding winter near Croydon. Subsequently Mr. Gould, Mr. Eyton and Macgillivray included it as a distinct species in their respective works, though Mr. Jenyns thought the point required further investigation, the first giving it the name of *Linaria canescens*, and there has since been little hesitation as to its admission among British birds.

This Redpoll is an inhabitant of the more northern parts of both hemispheres, in winter generally seeking a less inhospitable abode, and sometimes delaying its homeward return so long as to have induced the belief—of which, however, positive proof is wholly wanting—that it may occasionally breed in more southern latitudes. There can be little doubt that the flocks which come with more or less regularity to Great Britain have started from Norway or Sweden, and their occurrence is far more frequently observed on the eastern than on the western side of this island. In Shetland, says Saxby, it is a regular winter-visitant, appearing sometimes in large flocks early in September, first in the north of Unst and then proceeding slowly southwards, haunting the stony hillsides and feeding on the seeds of the sorrel. The track of its migration most likely passes down the eastern coast of Scotland, as shown by the fact that it does not seem to have been noticed in the western Highlands, while it has been occasionally observed in Aberdeenshire and Forfarshire, and then again not unfrequently about Edinburgh. However it would appear to cross the island at its narrowest part and Mr. Gray mentions its uncertain occurrence near Glasgow, while it has been found in Dumfriesshire and Galloway. It is possible that from the flocks thus attaining this westerly longitude have strayed the examples which have more than once been noticed in Salop—though there is no record of its occurrence in the intervening districts; but the bulk of those which strike Scotland never appear on the east to come further south than Yorkshire, and even to reach that county very seldom. In Northumberland and Durham however the bird is a common winter-visitant, and is occasionally seen in large flocks. It is not recorded from Lincolnshire. In Norfolk and Suffolk, it cannot be called an annual visitor, yet flocks of greater or less size maybe met with in several consecutive seasons: it sometimes arrives so early as the middle of October, and in the years 1847, 1855, 1861 and 1873 it was extremely plentiful. From those counties it seems to pursue its way through Essex to the London district, where the Author has been told it was abundant about the year 1815 (in which season the Lesser Redpoll is said to have been scarcely got by the birdcatchers) and again in 1829; but though it continues to shew itself at times there is no evidence of its having since occurred in any great numbers. In some seasons it also appears commonly near Brighton, especially, says Mr. Knox, about 1834, but, according to the same authority, less frequently of late years, though a few are almost always taken by the birdcatchers in winter. Further to the westward its occurrence is open to doubt, for, though Mr. Cocks has mentioned (Nat. 1851, p. 112) its appearance near Penzance, and the statement is confirmed by Dr. Bullmore, Mr. Rodd expressly says of it "not Cornish." It is comparatively seldom noticed in spring, but the Museum of Saffron-Walden contained a male that was killed in that neighbourhood in May, 1836, while one shot at Oundle by the late Mr. Pelerin was sufficiently advanced in its plumage to have acquired a considerable portion of red colour on the breast. The Editor saw a cock, in full breeding-dress, which was obtained at Riddlesworth in Norfolk, in July 1848 (Zool. p. 2382). Mr. Stevenson also mentions the occurrence of a flock of twenty or thirty so late as the middle of April 1862, in the same county, and (Zool. s.s. p. 871) a male netted near Norwich May 25th, 1867. The only known instance of this bird's appearance in Ireland has been kindly communicated by Mr. Harting, who received for identification the remains of one shot by Mr. W. J. Haughton, at Levitstown near Athy, February 9th, 1876.

Excepting in such as naturally follow from its larger size * and higher northern range the habits of this bird are exactly those of the Lesser Redpoll. When it visits us in autumn it resorts in flocks to the same kind of places, and in the actions of the two birds there is no difference perceptible—both of them being constantly engaged like Siskins (with which they often associate) in feeding on the alder, birch or willow, flitting from the end of one twig to that of another, and clinging in any attitude to those which bear food, keeping up nearly all the while an incessant and lively twittering. By their call-notes however the two Redpolls may be readily discriminated †—that of the present being, as was long ago noticed by Doubleday in a communication to this work, sharper and almost exactly resembling a Canary-bird's. The gregarious qualities of the Mealy Redpoll are also displayed in its summer-quarters, for though it cannot be said to breed actually in society, its nests may frequently be found in close proximity to one another; and their several owners may often be seen, as they form foraging parties or pass to and fro between their homes and their watering-places, taking their peculiar dancing flight in merry company over the neighbouring tree-tops—the cocks uttering their gay song on the wing or while they rest for a few moments on a branch, whence they again betake themselves joyously to the air. The most favourite breeding-places are generally in the more open parts of birch-forests or the outskirts of thickets of alders and willows, often in the neighbourhood of swamps. The nest is

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* Blyth made (Nat. 1837, p. 462) the curious observation, which the Editor can confirm, that both Redpolls being in confinement equally fond of hempseed it is only the larger of them which can ordinarily crack the seed for itself.

† Blyth (Nat. 1837, p. 460) states the contrary, but the Editor can support Doubleday's remark.

usually placed in the fork * of a birch or willow—sometimes very near the ground, or even, though rarely, in a tuft of grass upon it, and seldom at a greater height than eight or ten feet. It is almost always of remarkable neatness and beauty, built of bents and a few small twigs, occasionally intermixed with lichens and shreds of bark, and lined with willow-down, feathers (chiefly such as are white) or reindeer's hair. The eggs, usually five or six in number, measure from ·77 to ·61 by from ·52 to ·45 in.† In ground-colour they vary from french-white to deep greenish-blue—especially when fresh, and are marked with several shades of light red, reddish-brown or, very exceptionally, even brownish-black: some trace of marking is nearly always discernible but the reddish colour is frequently diffused in pale freckles all over the shell, while at other times it is collected in distinct spots or blotches which occasionally form a zone.

The breeding-season over, the various families collect in flocks that ever increase as summer draws to a close and at this season the cocks assume their most brilliant tints. In the far north of Europe hardly a grove of alders or willows by river or lake but then harbours a flock that finds more than sufficient food in the countless insects which throng such spots, and so these birds continue till the first frosts check their supplies. As the temperature decreases with the rapidly-lengthening nights a few weeks suffice to strip the trees bare, and on the destruction of those leafy retreats, with the insect-worlds they sheltered, the Redpolls have to adopt a vegetable instead of an animal diet, in the pursuit of which the flocks mostly quit their former haunts, betaking themselves whithersoever seeds, it matters little of what kind, are to be found. By far the largest number set out on the annual migration which in time brings them to this and other southern countries, but no inconsiderable portion remain in the land of their birth. These are fitted for the cold of an

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* In Norway the Editor once saw a nest placed in the top of a birch-stump the middle of which had rotted away leaving a kind of cup, formed by the upstanding bark, just of a convenient size to hold the bedding for the eggs.

† A dwarf specimen, obtained by the late Mr. Wolley and now in the Editor's possession, is the smallest bird's egg he has ever seen, being only ·43 by ·36 in.

arctic winter by an extraordinary growth of plumage, their new feathers, assumed at the autumnal moult, bearing very long white fringes, which not only greatly change the appearance of the birds, by almost entirely masking their darker colours, but form a warm clothing that affords the wearers an efficient protection against the rigours of the climate. This growth indeed takes place in all, but among those which flee from the severity of the northern regions at this season it bears no comparison as to extent with that which obtains among those that abide under high latitudes and thus muffled in their thick vestments await the return of spring.

But another and yet more remarkable seasonal change occurs in these birds, of which Wolley during his long residence in Lapland seems to have been the first observer, though his full explanation of it has not been made public.* It had long been known that examples differed greatly in the size and especially in the length of the bill, and many naturalists were inclined to believe that this difference indicated two races, if not species, of Redpoll.† A certain amount of it indeed was obviously rather apparent than real, being due to the length of the feathers on the bird's face, and thus the bill of a specimen obtained in winter always seemed much shorter than that of one procured in summer; but from repeated examination of birds killed out of the same flock he satisfied himself that during the latter season the horny covering of the mandibles was constantly growing longer, and attributed the fact to the softer nature of the food then eaten, observing that when winter really set in, and the birds were living solely on hard seeds, the edges and tip of the mandibles were rapidly worn down, so that the bill at the beginning of spring became considerably shorter than it was at the end of the preceding summer. If this mode of accounting for the change be true we can well understand that there should be cases in which the waning and waxing of the bill may go on independently of the season, provided only that the bird's food varies in places or at times sufficiently to produce the effects as observed by Wolley at Muonioniska with reference only to the season.

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* Wolley's residence extended over five summers and three winters: his views on this subject were first made known to the Editor in 1855. They are confirmed by Gloger's happy conjectures published some eighteen months afterwards (Journ. für Orn. Nov. 1856, pp. 433–440).

† The large-billed birds were described by Brehm (Handb. p. 280) in 1831 as forming a distinct species which he called *Linaria holbœlli*.

The breeding-range of this Redpoll in Europe is pretty well limited to the birch-region of its northern parts,* its most southerly extension being the Langfjeld in Norway, but in Sweden not beginning till near Œstersund. In Finland its boundary is uncertain, but it is not known to lie further to the southward than Kuopio, and even about Kajana the bird is not very common in summer. Throughout the whole of Lapland, it is very numerous. Its distribution to the eastward must as yet be spoken of with all reserve. It has commonly been thought to extend across the whole of Siberia to Kamchatka—as stated by the Russian naturalists, and examples have been procured in North China and Japan. This much is, no doubt, true, but most of the Redpolls obtained by Messrs. Alston and Harvie Brown about Archangel, and by the latter gentleman and Mr. Seebohm on the Lower Petchora seem to belong to a smaller form which requires further examination, and is indistinguishable from the *Ægiothus exilipes* of Dr. Coues.† Further research may very likely prove that each has its peculiar breeding-limits, but at present nothing more can be said with any degree of precision. After crossing the Pacific we find that the true *Linota linaria* is abundant in the northern parts of North America ‡—specimens from San Francisco in the west and Philadelphia in the east exactly agreeing with those from Scandinavia, while others from Greenland shew that it reaches that country in summer. But Greenland is also one of the homes of another and larger form of Redpoll which, occasionally visiting Great Britain and the continent of Europe, has been commonly, though erroneously, adjudged to be the *Linaria canescens* of Mr. Gould but is the *L. hornemanni* of Holböll *, while in North America no fewer than five other "species" of Redpoll have been elaborately described or admitted by Dr. Coues (Proc. Ac. Nat. Sc. Philad. 1861, pp. 222, 373–390; 1863, p. 40; 1869, p. 180). On these it is here unnecessary to pass an opinion, but it may be remarked that, according to Prof. Baird (Hist. N. Am. Birds, i. p. 492), only two of them satisfy the criticism of Mr. Ridgway, viz.—*Linota linaria* and *L. hornemanni* (the *canescens* of many authors).

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* It is said to breed in Iceland, but from a specimen sent thence to Mr. Hancock, the Editor thinks that the form found in that island is most likely the larger one to be presently considered.

† Mr. Brown has kindly given the Editor an opportunity of examining some of the specimens procured from each of these localities, and thus of correcting the assignment of the trivial names *rufescens* and *canescens* given by him and his friends (Ibis, 1873, p. 64 and 1876, p. 116) to the Redpolls they observed there.

‡ By nearly all the ornithologists of the United States the name "Lesser Redpoll" has unfortunately been applied to this bird.

To return however to our own bird in the Old World. To the eastward, as will have been gathered, we can but guess at its distribution, and must at present continue in doubt as to the form of Redpoll which pervades nearly the whole of European Russia, appearing in winter so far to the southward as Odessa. Even in Central Europe little that is positive can be asserted, for few of the German ornithologists have discriminated it from its near ally—the Lesser Redpoll next to be described; but it is supposed to breed occasionally in Thuringia and is probably a more or less regular winter-visitant throughout Germany, since it has been obtained at Vienna and even in Styria, where it is said by Herr Hanf to breed yearly (Verhandl. zool.-bot. Gesellsch. 1856, p. 694), and Carinthia, and at times occurs in Switzerland, where Col. Ward informs the Editor it was very abundant in the Canton Vaud during the winter of 1874–5. It appears in Italy, but, according to Dr. Salvadori, does not pass beyond the middle of the peninsula.† In the south of France it has been for many years known to occur, though, says Roux (who was one of the first to follow Vieillot in recognizing its distinctness), only accidentally at very long intervals and in the most severe winters. In the north of France its appearance is more frequent, but is still characterized by great irregularity, and probably the same may be said of it in Belgium and Holland. In Denmark it is often very common from November to March.

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* Naturhist. Tidsskrift, iv. p. 398.

† This author cites some supposed instances of its breeding near the lake of Como, but herein there may be a mistake on the part of the observers.

In summer the bill of the cock is of a dark brownish horn-colour, the lower mandible tinged with yellow at the base: the irides dusky brown: the feathers covering the nostrils brown; lores and ear-coverts blackish-brown, mixed with grey on the latter; forehead to behind the eyes glossy blood-red; rest of the head, nape, mantle and upper wing-coverts blackish-brown, mottled in some places, especially on the neck, by the whitish edges of the feathers; both middle and greater wing-coverts tipped with greyish-white, forming two conspicuous light bars of unequal length on the wing; quills, both of wings and tail, dusky, narrowly bordered with greyish-white; lower part of the back, rump and upper tail-coverts blackish-brown, bordered with greyish-white, and tinged with crimson on the last; chin black; throat, chest and sides of the breast glossy rose-pink, mingled with white, and more or less spotted and streaked with brownish-black; middle of the breast, belly and lower tail-coverts dull white; flanks greyish-white streaked with dusky brown: legs and toes brown; claws blackish-brown.

After the autumnal moult and throughout the winter the bill is yellow, with the point dusky: the feathers covering the nostrils and those on the head immediately above the bill are light yellowish-grey, the red cap not extending quite so far forward; all the rest of the feathers, except the quills, more or less thickly bordered with long fringes of a light yellowish-grey on the head, neck and mantle, but on the lower part of the back, rump and belly of a nearly pure white. These long fringes continue till past midwinter, and, as already stated, in examples from high northern localities almost entirely hide the darker parts of the feathers. As spring advances they are slowly shed, and the crimson tint of the rump and breast gradually appears, but the birds have generally done breeding before this attains its greatest intensity.

The whole length is five inches or a little more; from the carpal joint to the tip of the wing, two inches and three-quarters; the fourth primary is one-sixth of an inch longer than the fifth; the tail, which is decidedly forked, is about two inches and a quarter. The bill, as above stated, varies very considerably in size.

The hen is perceptibly smaller in all her dimensions. In summer her plumage greatly resembles that of the cock at the same season, but, except on the head, there is no red, and the upper parts are generally darker, while the lower are more mottled and streaked. In winter there is comparatively little difference in the appearance of the two sexes.

The nestling has the bill brown: the lores blackish; the head and nape blackish-brown, each feather bordered with greyish-buff; mantle the same, but the feathers edged with light reddish-brown; lower part of the back and rump like the head, but in some examples slightly tinged with buff and the grey verges upon dull white; the wings are as in the adult, but the feathers are tipped with pale reddish-brown instead of greyish-white; the tail-quills are also narrowly bordered with dull buff; the chin just shows an indication of the dark patch of the adult; the sides of the neck, the throat and breast are dull greyish-buff, each feather tipped with dark brown; belly, flanks and lower tail-coverts much the same but the warmer tint by degrees gives way to dull white, and the dark tips are elongated into the form of ill-defined streaks: the legs and toes are of a dull flesh-colour; claws pale brown.

A few words must be added on the still larger form of Redpoll, *Linota hornemanni,* already mentioned. Holböll states that examples of it were sent by him in 1824 from Greenland to Temminck, who at once recognized its distinctness,* but afterwards erroneously referred it to the *Linaria*

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* In this determination he is said to have been assisted by Friedrich Boie who from his Norwegian experience was of course familiar with the true *Linota linaria.*

borealis of Vieillot, and as such gave it in 1835 the place of a good species in the third part of his 'Manuel d'Ornithologie' (p. 264). In 1838 Bonaparte (Geogr. and Comp. List; p. 34) admitted three Redpolls as European birds, *Linota canescens*, *L. borealis* and *L. linaria*, by the first of which is meant this largest form, though it is not the *canescens* of Mr. Gould, by the second the true *linaria* of Linnæus, our Mealy Redpoll just treated of, and by the third our Lesser Redpoll next to be considered. And so when, in 1843, Holböll published his description of *Linota hornemanni*, he identified it with the *Linaria canescens*, with which it should not be confounded. He gave a good description of its habits and appearance, stating that it was resident in Greenland throughout the year, while the other Redpoll found in that country (*L. linaria*) was but a summer-visitant, that it did not appear to breed further to the southward than lat. 69° N. and was common enough even in lat. 73°, but in winter gathered in large flocks which wandered over the interior. It has since been said to occur occasionally on the continent of Europe, and Degland mentions one in Baillon's collection which was netted near Abbeville; but the Editor can only point to a single example obtained in England. This is in the collection of Mr. Hancock, who has described and figured it in his 'Catalogue of the Birds of Northumberland and Durham' (p. 54, pl. 5), saying that it was knocked down with a clod of earth, April 24th, 1855, on the sea-banks near Whitburn, where it had been observed flying about for a few days. This form of Redpoll probably visits the continent of America at times in winter, but the only satisfactory additions that can here be made to what was previously known of it, are that Mr. Hancock possesses a specimen from Iceland, and that Mr. Eaton in 1873 found it breeding at Wide Bay in Spitsbergen*, where he obtained a specimen which is now in the Museum of the University of Cambridge.

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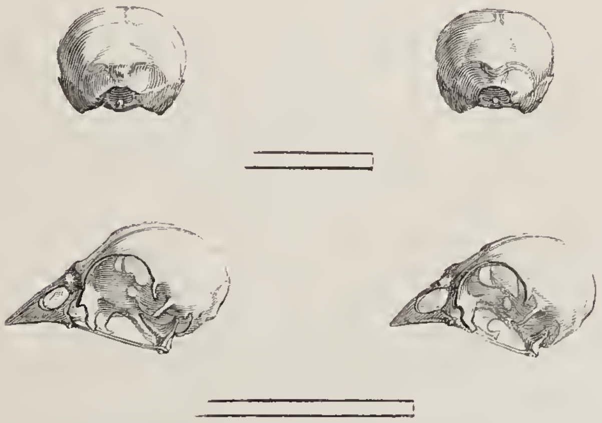
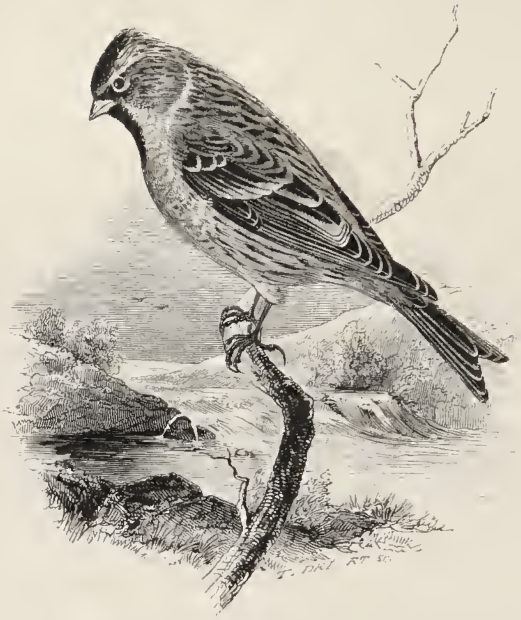
* Scoresby (Arct. Reg. i. pp. 131 and 537) had long before stated that a Redpoll was found in Spitsbergen, but none of the naturalists visiting that country since his time having met with it, they had commonly supposed him to be mistaken. The more than vindication of his accuracy by Mr. Eaton makes the latter's voyage memorable among ornithologists.

The Arctic Redpoll, to adopt Mr. Hancock's name for it, chiefly differs from the ordinary Mealy Redpoll in its larger size and paler tints, while on closer scrutiny its somewhat longer and more deeply-forked tail, and rather longer claws become evident. Even in full summer-plumage none of its colours seem ever to be so dark as in the commoner bird, but the examination of a larger series of specimens than has hitherto fallen to the lot of the Editor is needed before this can be averred with certainty. In winter the excessive whiteness of the margins of its body-feathers is at once striking. A cock-bird will measure in entire length five inches and a half, and its wing from the carpal joint three inches and a quarter, the tail being about two inches and a half. The hen is not inconsiderably smaller—with the wing measuring three inches or a little over, and the tail about two inches and three-eighths.

The vignette represents the skulls of the Mealy and Lesser Redpoll, with comparative linear measurements, drawn from specimens prepared by the late Mr. Pelerin, and by him supplied for the use of this work.





LINOTA RUFESCENS (Vieillot *).

THE LESSER REDPOLL.

Linota linaria †.

The Lesser, and with us the more common, Redpoll is the smallest of the British Finches, and is generally distinguished from the preceding, not only by its size, but by its darker and more rufous colouring—the replacement especially of the whitish bars on the wings and of the mealy rump by the latter being nearly always perceptible. As already premised, many writers have taken this bird to be the *Fringilla linaria* of Linnæus and have used that epithet for it; but, apart from the consideration that his diagnosis absolutely excludes it from being so regarded, there is the still stronger fact that our Lesser Redpoll is unknown as a native of Sweden, and therefore cannot be the bird which he describes as frequenting the alder-groves of that country, though from the synonyms he cites it is certain that he was not aware of the difference between the two forms, which, as before stated, Vieillot first clearly pointed out. It is to be hoped that British ornithologists will no longer perpetuate the error of calling their little favourite by a name which does not belong to it.

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* *Linaria rufescens*, Vieillot, Memorie della Reale Accademia delle Scienze di Torino, xxiii. Sc. Fis. p. 202 (1816–1818).

† Not *Fringilla linaria*, Linnæus.

In some English counties, particularly in the south, this Redpoll is known only or chiefly as a winter-visitor, appearing in flocks from Michaelmas till April, though in others it breeds more or less regularly, and the nest has been found, according to the late Mr. Bury, so far to the southward as the Isle of Wight (Zool. p. 643). Towards the north, and in Scotland especially, it is resident all the year, changing its haunts however according to the season. Information collected by Mr. More shews that of English counties it occasionally breeds in Dorset, Hampshire, Oxford, Warwick —where indeed Mr. Rake says (Zool. p. 9248) he has repeatedly taken its nests—and Salop—where Mr. Rocke (Zool. p. 9781) believes it breeds regularly. To these Middlesex must be added on the authority of Mr. Harting, Kent on that of Mr. Wharton (Zool. p. 8951), Surrey on that of Newman (Zool. s.s. p. 3235), Cambridgeshire on that of the Editor, and Worcestershire on that of Mr. J. A. Drake, as cited by Mr. Morris. Mr. More further states that it breeds annually in Gloucestershire, and it certainly does so in Suffolk, Norfolk, Lincolnshire, Nottinghamshire, Derbyshire, Cheshire and thence in every county lying to the northward throughout the island. But the places it frequents vary year by year, and, without our being able to account for the fact, otherwise than on the general supposition that its choice is influenced by the supply of food, it may be found in a locality abundantly during one season and during the next may be altogether wanting.* This remark however chiefly holds good as regards the more southern parts of its breeding-range, for in the more northern it exhibits a much greater constancy. The same may be said of it in Ireland, where it is found from north to south, though more plentiful in the former, and in the latter, indeed—the counties Cork and Kerry for instance, it seems to have been only observed as a winter-visitor. Yet it is presumed to have bred on the Blackwater in Waterford, and is known to have done so in Tipperary, about Clonmel.

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* Mr. F. Norgate has known of thirty or more nests in one year at one locality in Norfolk, and in the next year scarcely any.

According to the best authorities the Lesser Redpoll is in some years abundant at the time of migration in Holland and Belgium, and it has long been known in France as a regular winter-visitant. It is of nearly annual occurrence, says M. Lacroix, on the northern slopes of the Pyrenees, and in some years reaches Southern Spain as well as Provence. Its breeding in France is denied, but is asserted by Bailly with regard to the Alps of Savoy. Dr. Salvadori, however, considers its appearance in Italy to be very doubtful. That it should occur at least accidentally in Western Germany seems highly probable, but the Editor cannot find positive proof of the fact, and in the recorded cases of its occurrence in that country we may suspect that young examples of the Mealy Redpoll have been mistaken for it. It is certainly unknown throughout Scandinavia. Its geographical range thus seems to be extremely limited *, and, with the asserted exception above mentioned, its area of distribution during the breeding-season appears to be confined to the British Islands. If this be so some explanation is afforded of the difficulty which many foreign naturalists have found in admitting the distinctness of the present form of Redpoll, since few of them probably have had the opportunity of examining a series of specimens of the true *Linota rufescens*.

Regard being had to the necessary effect of its restricted range, as just indicated, the habits of the Lesser Redpoll so closely resemble those of the Mealy Redpoll that the account of them already given would almost as well apply to the present bird. Yet in a few points some slight differences may be noticed. The Lesser Redpoll, though very partial to holts of alders, birches and willows, is not at all exclusive in its choice of them for its breeding-quarters, and, besides selecting coppice or underwood, will quickly avail itself of the accommodation offered by young plantations of larches, firs or trees of almost any kind, as well as of shrubberies. Some shelter however is always needed, and Mr. Gray says that among the Hebrides he has been unable to trace it where such is absent. From Saxby's silence on the subject it would seem not to breed in Shetland—possibly from the same cause. The vicinity of water is generally preferred, but its actual proximity is not absolutely essential, and the distance of a mile or so from where it can be procured is no bar to an otherwise eligible situation*. Such a spot is often frequented by several or many pairs of these birds, which will have their nests within the compass of a few yards, and in that case the actions of the birds soon make the existence of the settlement evident to an ordinary observer. But they are by no means always gregarious even to this extent, and single pairs may be found taking up their abode apart, while again considerable numbers will often meet at places far from their nests, apparently prompted only by their social instincts—for they do not seem to be in search of food, and, after passing half-an-hour or more in company, will separate and go their respective ways. The nest is usually built in a low tree or bush, but occasionally at a very considerable height, and on the other hand an humble site among heather may be chosen. It is nearly always a structure of the most delicate beauty, formed outwardly of a few fine twigs as a foundation, on which are placed dry grass-stems, sometimes intermixed with moss and wool, the thinner stalks being innermost, and is lined with vegetable-down, that from the catkins of the willow being most often used, with the addition or substitution sometimes of hair and feathers. The whole nest is about an inch and a half in diameter and the same in depth inside, the walls being scarcely anywhere an inch in thickness *. The eggs, from four to six in number, are not to be distinguished in colour from those of the Mealy Redpoll, but are smaller in size, measuring from ·69 to ·57 by from ·52 to ·45 in. The time of nidification would seem to vary somewhat according to locality. In the north of England it doubtless begins so late that the young are, as stated by Selby, seldom able to fly before the end of June or beginning of July, but further to the southward the birds are certainly a month earlier, as eggs are known to have been laid by the end of April, though they may be also found unhatched in June. In the north of Ireland, according to Thompson, the eggs are laid during the first half of May. The tameness of this pleasing little bird has long been known. Pennant says that one "was so tenacious of her nest as to suffer us to take her off with our hand, and we found that after we had released her she would not forsake it." † But this absence of fear is not confined to the breeding-season, and even in autumn and winter, when nearly all other birds are wildest, a flock of Redpolls as they feed may not only be closely approached, and their various engaging actions studied within a very short distance, but advantage may even be taken of their heedlessness or unsuspecting confidence to capture some of the party by means of a limed rod, or to shoot at will almost any number of victims, the survivors, as Mr. W. T. Bree has remarked (Nat. 1838, p. 426), returning to the same tree after each discharge of the gun.

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* Its supposed occurrence in Northern Russia has been shewn in a previous note (p. 140) to be erroneous. Drake (Ibis, 1867, p. 427) included this bird among those he saw in Morocco, and MM. Jaubert and Barthélemy-Lapommeraye say that it sometimes visits Algeria in winter, but some further evidence is needed before the belief that it goes so far to the southward can be accepted.

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* In a district very ill-supplied with water where these Redpolls have occasionally bred in abundance, the Editor has found that waiting by a pond-side for them to come to drink, and then marking the line of their return-flight, often leads to the discovery of their nest.

As summer draws on the Lesser Redpoll may be seen in bands scattered over tracts of open country, feeding, like Goldfinches, on the seeds of the thistle, groundsel, dandelion and other composite plants, but with the approach of autumn these bands usually unite in larger flocks, and though some undoubtedly stay near their breeding-quarters, betaking themselves once more to woods, plantations or

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* A nest brought to the Editor which was taken, in 1873, in a garden at Cambridge was built in and upon that of a Long-tailed Titmouse.

† Both this bird and the Mealy Redpoll are easily reconciled to and have bred in captivity.

hedgerows, the majority and especially the young of the year keep to the unenclosed districts and migrate southward. Of these again a considerable number leave this country altogether and resort, as has been already noticed, to the Continent, but enough always remain with us during the winter to render their appearance, except in the extreme west of England and Ireland, no rare event. Many a dull day at that time of year is enlivened to the outdoor naturalist by his encountering a flock of Redpolls, for to watch their agile movements as they flit from tree to tree or swing back-downwards from the ends of the pendulous branches, all the while keeping up an incessant twittering, invariably affords interest and amusement. At this season, and even earlier, they often associate with Siskins in their search for food, and eat the buds as well as the seeds of trees, proving in this way, says Selby, seriously injurious to young plantations, but in general their numbers cannot be sufficient to produce any great damage. Occasionally too they will fall in with a troop of some species of Titmouse, but the incongruous companionship does not last long. The same locality is seldom frequented for any length of time: in a few days, or perhaps little more than a week, the supply of food it furnishes is exhausted, and then the party rove off in some other direction. Towards the end of winter the cocks break out in song, which though not powerful is lively and agreeable, and begin to indulge in the characteristic exultant flight during which it is generally uttered. Pairing is effected without much more than the show of contention, and the mated couples, who exhibit the strongest tokens of mutual affection, shortly after look out a convenient home for the ensuing season.

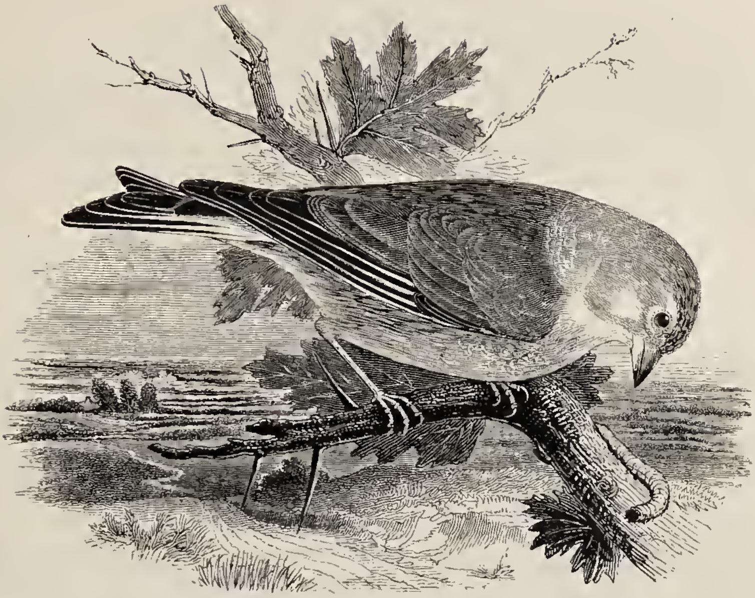
In summer the bill of the cock is brownish horn-colour, the lower mandible tinged with yellow at the base: the irides dusky brown: the feathers covering the nostrils light brown; lores and ear-coverts blackish-brown mixed with rufous on the latter; forehead to behind the eyes glossy blood-red; the rest of the head, nape, mantle and upper wing-coverts, dark brown, the feathers more or less broadly edged with light reddish-brown intermixed sparingly with whitish-grey; both middle and greater wing-coverts tipped with pale reddish-brown (as in the nestling Mealy Redpoll), forming two conspicuous light bars of unequal length on the wing; quills of both wings and tail dusky, bordered externally with wood-brown, and the tertials broadly tipped with light reddish-brown; lower part of the back, rump and upper tail-coverts dusky-brown, bordered with light rufous, and the last tinged with crimson; chin black; throat, chest and sides of the breast, glossy rose-pink, mingled with dull white; middle of the breast, the belly, flanks and lower tail-coverts, dull greyish-white; sides of the body and flanks streaked with dusky-brown: legs and toes blackish-brown, the claws darker.

In autumn and winter the bill is yellow with the point blackish, the light margins of the feathers are everywhere longer, giving the upper parts of the bird a more rufescent appearance, and the pink tint hardly makes any show until after midwinter at the earliest.

The whole length is four inches and a quarter; from the carpal joint to the end of the wing, two inches and five-eighths; the fourth primary is one-twelfth of an inch longer than the fifth; the tail is about two inches long.

The female is a little smaller, and has no trace of pink on the breast or rump; the chin is brownish-black, and the lower parts are dull brownish-white, the breast, sides of the body and flanks being streaked with dusky brown.

The nestling has the bill pale brown, with the upper mandible rather darker: the head and nape dark brown—each feather broadly edged with dull white; back and upper tail-coverts dark brown—the feathers bordered with light reddish-brown; the wings and tail resemble those of the adult, but the feathers are edged and tipped with buff; the chin, neck, breast and flanks dull white, with a tinge of light reddish-brown on the first, each feather tipped with dark brown; the belly, flanks and lower tail-coverts greyish-white—the last being streaked with dark brown: the legs and toes pale brown, the claws darker.



Linota cannabina (Linnæus *).

THE LINNET.

Linota cannabina.

From the great changes undergone by the males of this species at different seasons of the year, it was long before the earlier British naturalists fully admitted that what were known to them as the Red Linnet and the Grey or Brown Linnet were the same bird in different plumages, but now for many years no reasonable doubt on that score has existed; though the conditions, under which the bright red colouring of the breast and part of the head of the cock is donned and doffed, may be still deemed open to discussion and awaiting further investigation.

The Linnet is a very well-known species, existing in great numbers on most of the uncultivated lands of this country, preferring especially those that are more or less overgrown with furze. Of late years, in the opinion of many observers who are fitted to judge, it has become much scarcer—as indeed would naturally follow from the bringing its favourite haunts under the plough—but this decrease does not seem to be so general as in the case of the Goldfinch, and, since the Linnet to some extent frequents also enclosures and the outskirts of plantations, there are perhaps few rural parishes in the United Kingdom to which it does not still resort. Though as a species it is found with us all the year round, there is no doubt that a considerable proportion of the birds which pass the summer in England arrive here from the south in spring, while in autumn very large flocks consisting of the bulk of those that have been bred in this country, in addition to the visitors, leave our shores. When congregated before their departure they are eagerly sought by birdcatchers, for they are easily netted, and the cocks always meet with a ready sale, as when taken at that season they soon adapt themselves to confinement and are much esteemed for their song.* Of those captured in spring a large number on the contrary are impatient of imprisonment and die within a short time. The detestable practice of catching them at this season no doubt further accelerates the diminution of the species throughout the country.

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* *Fringilla cannabina*, Linnæus, Syst. Nat. Ed. 12, i. p. 322 (1766).

Except when actually breeding, Linnets are usually seen in flocks, roving from place to place, feeding generally on small seeds, particularly those of the cruciferous plants, and are believed to do much mischief at times to crops of coleworts, but they consume equally countless grains of the obnoxious charlock and knot-grass, while they also confer great benefit on the agriculturist by the destruction of weeds belonging to the order *Compositæ.* Their fondness for the seeds of the various species of flax (*Linum*) and hemp (*Cannabis*) has long been known, and has given them their name in several European languages—our own and the Latin among others. Some of the Linnets that remain with us throughout the winter seem in time of need to add to their diet such berries as are accessible, and are said even to eat oats among other food.

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* Willughby knew a Linnet which lived for fourteen years in a cage.

In the pairing season, the thickest clumps of furze are generally frequented, and early in spring the cocks may be seen rapidly flitting from bush to bush, always perching on the higher or outer sprays, and singing almost incessantly.* Their strain is commonly in a soft and low tone, but it has some notes of a singularly shrill sweetness, that, at intervals of the greatest irregularity, mark the confused warbling which is the result of two or more rival performers—more bent upon shewing off their own prowess than blending their voices in harmonious concert. The nest is usually formed of fine twigs and fibres outside, mixed with moss and grass-stalks, and is lined with wool, hair or vegetable down, and sometimes a few feathers are added. It is generally placed in a low bush, but often in a hedge and occasionally in a tree at ten or twelve feet from the ground, while other less usual sites have been recorded. The eggs are from four to six in number, measuring from ·76 to ·64 by from ·56 to ·49 in., and are of a french-white, more or less tinged with green or blue, generally spotted, speckled or blotched with light reddish-brown and pale purplish-red, but sometimes the markings are almost entirely absent, while at others they are either suffused or collected into bold and dark spots. The Linnet appears to breed twice in the season, the first eggs being laid in April.

When the broods are reared and the summer is over the different families unite to form large flocks, which may be seen careering vaguely over the country—the individuals composing each flock constantly crossing and recrossing one another in flight. At this time they often resort to the more enclosed districts, visiting alike pastures, stubbles and fallows, in search of such small seeds as they can find, and roosting at this season on the ground. Many also following their migratory instinct repair to the coast, where they feed on the seeds of the sea-purslane and other maritime plants, and it is perhaps in such neighbourhoods that most of those which stop with us reside until the returning spring. Towards the close of a fine winter's afternoon the various straggling parties that have been foraging all day long congregate on the top of some tall tree in the sunshine, and at first join in a gentle sort of chirping, presently bursting into a full chorus of song, and then again resuming their single strains continue this performance till the sun is set.*

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* As songsters few birds are perhaps more variable than Linnets—a fact well known to "the fancy". Some can only repeat two or three unconnected notes, which may be of the harshest tone, while others have a very considerable compass, and sing in a continuous manner. Neville Wood inclined to the belief that they improved in song the second or even the third year.

The Linnet is generally distributed, as before remarked, over the United Kingdom—exception being made as regards Shetland, and is especially common in Ireland. In the lowlands of southern Norway it is pretty common, but becomes scarcer towards the north and is not known to breed beyond lat. 63°. In Sweden it does not usually appear much higher, but Johann Wahlberg obtained it at Luleå, and Wheelwright says that he saw it at Quickjock. The latitude above mentioned seems also to mark off its ordinary limit in Finland and Russia, in which latter it is found on the Dvina and so probably to the Ural mountains. Pallas says it is never seen in Siberia, but it is now known to inhabit Turkestan, which at present must be taken as its most eastern extension.† Thence it may be traced through Persia, Circassia, Armenia, Asia Minor and Palestine, where it breeds, to Egypt, where it is a winter-visitant, and Abyssinia. In Algeria and Morocco it is abundant, as well as in the Canaries and Madeira. In the locality last named, the cocks are said to keep their bright colouring all the year, instead of losing it in winter. Throughout all the rest of Europe, south of the boundary above indicated, it is plentifully dispersed, and, except in the most northern parts, is generally to be found at every season, though, as with us, the great bulk of the birds depart at the approach of winter.

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* It is at this time that the combination of sounds resembles the ending of the Redwing's song as before stated (vol. i. page 270).

† Under the name of *Linota fringillirostris* Bonaparte described (Monogr. des Loxiens, p. 45, pl. 49) a bird said to come from Nepaul. It appears, however, to be unknown to Indian ornithologists. Some authors refer it to the common Linnet, to which, even if it be a good species, it must be nearly allied. Syrian specimens of the Linnet, it may here be remarked, have been looked on as forming a distinct species and called by Ehrenberg *Fringilla bella*.

A very fine male in full summer-dress has the bill of a bluish lead-colour but paler at the base of the lower mandible: the irides hazel: the feathers immediately above the bill, on the lores and round the eyes, light dusky ochreous; those of the fore part and top of the head glossy blood-red; those of the rest of the head, the ear-coverts, nape and sides of the neck, brownish-grey, more or less distinctly streaked with a darker shade; the back and upper wing-coverts, nearly uniform rich chestnut-brown; bastard-wing and coverts of the primaries brownish-black, edged with hair-brown; the primaries and secondaries dull black, outwardly edged with white, which on the fifth, sixth and seventh is broad and very conspicuous during flight, the secondaries are also tipped with greyish-white; the tertials dusky, with their outer web dull chestnut-brown; upper tail-coverts brownish-black, broadly edged with ochreous-white; tail-quills black, narrowly edged with white on the outer and broadly on the inner web; chin and throat greyish-white, streaked along the middle with greyish-brown; breast glossy rose-red, passing into light chestnut-brown on the sides of the body; belly and lower tail-coverts dull white; flanks yellowish-brown: legs, toes and claws, brown.

Such an example as is above described is not very often to be met with. Most commonly the fine carmine of the cap and of the breast is replaced by a brownish lake-red, clouded with rufous-brown—the feathers on those parts not having wholly shed their fringe of the latter colour; brown prevails on the occiput and neck, and pale brownish-ochre on the throat and belly, while the back is darker; but it would seem that the red tints continue to brighten as the summer proceeds until the whole plumage is changed at the autumnal moult.*

In autumn and winter the bill is brownish horn-colour: the crimson wholly disappears from the cap and the breast; the feathers of the head, cheeks and ear-coverts, are dark brown, with lighter brownish-grey edges; the back and upper wing-coverts, dark brown, the margin of each feather being lighter; the quills remain as in summer; but the throat, breast, belly and lower tail-coverts, are pale wood-brown, with conspicuous streaks of dark brown on the breast.

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* What is known among birdcatchers as the "lemon", "saffron" or "sulphur" -breasted Linnet occurs not unfrequently near Brighton, Mr. Rowley thinks in the proportion of about one to fifty. In this the crimson of the breast is replaced by a fine lemon-yellow.

Males when caged never acquire the fine crimson seen on the head and breast of wild birds; and such as are caught when possessing it speedily lose it in captivity. Naturalists generally believe that this brilliant tint is not assumed till the second year or even till after the second moult*, but it is an undoubted fact that many Linnets are found breeding without the red breast, and this, as would appear, especially in the north of England, though in the south some trace of the ruddy colouring may nearly always be found in the summer-plumage of the cocks. Its development indeed seems due, as was stated long ago by Temminck and since confirmed by Gloger, Macgillivray and Herr Meves, to the weathering of the brown fringes of the feathers, may be through rain, and possibly also to the action of light in dissipating the duller hues. To this last cause perhaps may be attributed the alleged fact of the Madeiran examples retaining their gay tints all the year round.

The whole length is about five inches and three-quarters: from the carpal joint to the tip of the wing, three inches and an eighth; the second primary is usually the longest, but there is some individual variation in this respect, the third being occasionally longer than the second, but both are always longer than the fourth, which is about a quarter of an inch longer than the fifth, while the first as stated among the generic characters is so small as to be easily overlooked.

The female is a little smaller than the male, and has the upper parts dark brown, each feather, however, being broadly edged with light rufous-brown; while the lower parts are dull ochreous-brown, slightly tinged with rufous, and streaked with dusky-brown. A female is said however to have been taken bearing a fine red breast.

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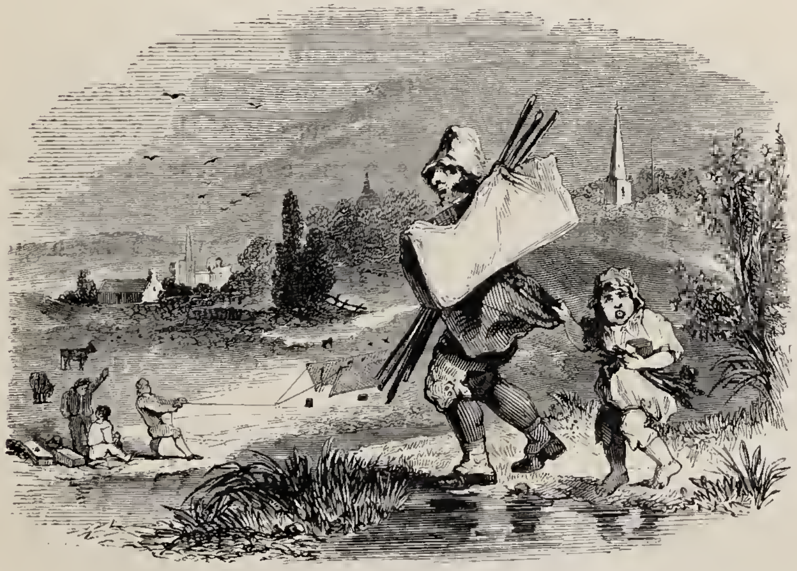
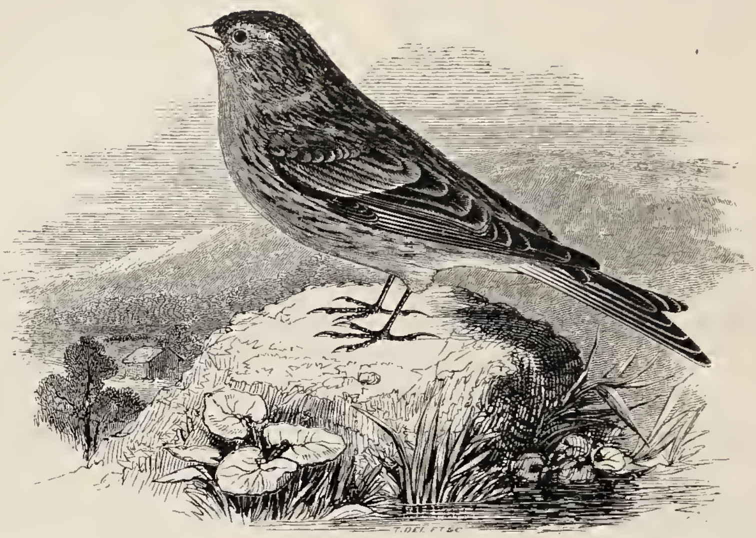
* Mr. Hancock, however, has very recently stated "that the males, from shedding the nest feathers get a red breast, which they retain only during the first season; they then assume the garb of the female, which is retained for the rest of their lives." With the greatest respect to the experience, judgment and acute observation of his friend, the Editor is compelled to think this opinion mistaken.

The young much resemble the female, but have less of ochreous-brown and none of the rufous tinge on the breast, belly and flanks.

The vignette represents the mode of working clap-nets, a very effectual engine in constant use among birdcatchers. It consists of two equal flaps of net, each about twelve yards long by two yards and a half wide, which by a simple contrivance can be simultaneously pulled over towards each other, so as to cover the space between their points of motion, which are in parallel lines nearly as far apart as the width of both flaps. Call-birds, either caged or tethered by a brace, are set about the nets to decoy their wild brethren that come within sight or hearing. One birdcatcher is represented in the act of pulling the two flaps over to enclose the birds between them: the man in the foreground, with his nets packed at his back, exhibits their convenient portability; while the boy with the bird-call already in his mouth shews another needful accessory to success.



PASSERES. *FRINGILLIDÆ.*



LINOTA FLAVIROSTRIS (Linnæus *).

THE TWITE.

Linota montium †.

THE TWITE is at once distinguished from the common Linnet by the greater length of its tail, which gives it a more elongated and slender appearance, and by having a reddish-tawny throat. Moreover it assumes no crimson colouring, either on the head or breast, at any season of the year, though the rump of the male is always more or less of that tint, forming the chief external characteristic of the difference of the sexes. This bird was first made known to Willughby by Jessop, of Broom Hall, who found it in the Peak of Derbyshire. Rudbeck, the Swedish naturalist, included its portrait in his collection of coloured drawings and, on the strength of this figure, it was named *Fringilla flavirostris* by Linnæus, who also described it in his 'Fauna Svecica,' but so inadequately that, but for Prof. Nilsson's subsequent determination of the subject of the picture (K. Vet.-Acad. Handb.

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* *Fringilla flavirostris*, Linnæus, Syst. Nat. Ed. 12, i. p. 322 (1766).

† *Fringilla montium*, J. F. Gmelin, Syst. Nat. i. p. 917 (1788).

1816, p. 27), the application of the name might still be doubtful. In the meanwhile other authors, Brisson and Pennant among them, had more fully described the species, and some years later J. F. Gmelin in his compilation conferred the name *Fringilla montium* on their bird without perceiving that it was identical with *F. flavirostris*. For this perhaps he is not much to be blamed, but his diagnosis is altogether inapplicable, and, though his appellation has been generally used by British writers, we need feel no compunction in setting it aside for that which had been before given.

The Mountain-Linnet, as many writers of books have called it, though for nearly a century at least it has been far more generally known to those most conversant with it as the Twite, is only a visitor to the eastern and southern parts of England, where it is generally seen in small flocks, which, arriving in autumn, sometimes stop for the winter in favourable situations, but mostly pass on and may again be observed on their return-journey in spring. In the south-west, Devonshire and Cornwall, it is of very rare occurrence indeed*, but it breeds in some abundance in the more hilly districts of the Midland Counties—Hereford, Salop, Stafford, Derby and Chester, as well as in North Wales and the Isle of Man, and on elevated moorlands in the higher glens with increasing frequency northward from Lancashire and the West Riding of Yorkshire to Shetland, though in some districts it is rather scarce, and its stronghold in the west of Scotland is the Outer Hebrides. In Ireland it is found from north to south, and probably breeds in suitable localities throughout the island, but the only counties in which the Editor can yet say that it does so are Donegal, Tyrone, Armagh and Antrim in the north, Sligo and Mayo in the west, Dublin and Wicklow in the east, and Tipperary and Cork in the south.

In food, flight and general habits the Twite very closely resembles the Linnet, which it partly or wholly replaces in some of the wilder or more mountainous districts of these islands, and much that has been said of that species applies equally to the present. The Twite, however, is naturally far more a bird of the open and, content with the shelter afforded by long heather and the ordinary vegetation of a moorland country, it commonly retires before the encroachments of cultivation. But where, as in the northern and western Scottish isles which it permanently inhabits, retreat is impossible, it has of late years begun to accommodate itself to the changes wrought by agriculture and the planting of trees. In early spring it betakes itself to its chosen quarters, and the flocks in which it has collected during winter disperse in pairs over the hilly tracts. The song of the cock is pleasing, and, though scarcely equal to it in compass, has much in common with that of the kindred species, being often delivered from an elevated perch, or while the bird is fluttering above the spot where the nest is. This is most generally placed among heather, furze or brushwood, but often on the ground, under large stones, occasionally on a ledge of rock, and in various other situations. Both in Shetland and in the Hebrides the increasing growth of trees and shrubs has latterly induced this bird to prefer them as a building-place, and to that end it comes into gardens and occupies the fruit-bushes, while a favourite site is beneath a long strip of turf that has been turned up by the plough. The nest, which seems to take a good many days in building, is neatly formed of fibrous roots, twigs or stalks of plants, dry grass and moss, worked up with wool, and usually lined with feathers, hair or fur. The eggs, five or six in number, measure from ·74 to ·65 by from ·54 to ·47 in. When looked at one by one they are generally quite indistinguishable from those of the Linnet, but a series shews that the light red markings are less frequent and the bold dark brown specks or blotches, which in this species often take the form of irregular lines, more numerous.

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* Mr. More was informed that the nest had been found in the north of Dorsetshire, but this is very unlikely.

Where, as in the Scottish isles, this bird is extremely abundant, it assembles in vast flocks in winter and is accused, apparently not without some show of reason, of being very mischievous. It resorts to the corn-yards and undoubtedly consumes, when the opportunity offers, a large quantity of grain; but Saxby has placed beyond doubt the fact that its chief object in boring, as it does, into the stacks is rather to obtain the innumerable small seeds of various weeds that are harvested with the crop. Accordingly he thinks that this habit should be reckoned among its good deeds. A far graver charge against it, in these islands, is that of destroying the newly-springing turnips and cabbages, and the guilt here must, he says, be admitted, though common precautions would easily guard against the loss. On the whole he considers that the farmer gains by the bird's consuming the seeds of noxious weeds, and especially by its rooting out the hateful charlock on which it feeds equally with the cultivated cruciferous plants. Over by far the greater part of this country the Twite is not sufficiently numerous to affect crops one way or the other, but when it visits the lowlands, as is the case every winter, whatever it does must be beneficial, for it keeps almost entirely to the stubbles and fallows, which at that season afford it nothing that is valuable to man.

The appearance of the Twite in the south and east of England is subject to much irregularity, especially as regards numbers. It is most commonly seen consorting with Linnets, frequenting like them the neighbourhood of the sea-coast, and usually feeding on the seeds of maritime plants, but it also occurs not rarely inland. Our bird-catchers immediately recognize its presence among a flock of its congeners by its shriller call-note, the sound of which is considered to resemble that of the word "*twite*," whence the name by which it is so generally known. Otherwise there is not much to distinguish it when at large from the Linnet, though a practised eye may perhaps perceive its more taper form and the smaller extent of white shewn on the wings and tail as it flies.

The Twite breeds in certain spots along the coast of Norway as high as Tromsö, as well as in some parts of the interior, but it is not generally dispersed in that country, nor in Sweden, where indeed its breeding-area seems still more limited, not being known to extend below the subalpine districts nor northward of lat. 64° 40′ N. In Finland the bird has been observed near Uleåborg and may perhaps breed there. In autumn however it is found abundantly throughout the middle and southern parts of all these countries as well as in Denmark, and occasionally winters there if the weather be not too severe. Further eastward its boundaries at no season of the year can be confidently laid down. It may be presumed to breed in some parts of Russia since it has been several times obtained near Archangêl and it occurs, though rarely, in winter in the southern Governments. There is no authority for its appearance in Siberia, but Messrs. Dickson and Ross include it as observed in flocks in autumn at Erzeroom, and Dr. Severzov gives it as being found in winter in Turkestan, but in both cases the nearly-allied *Linota brevirostris* has most likely been mistaken for it. Except as above stated it nowhere breeds in Europe. On the southern shores of the Baltic it arrives abundantly in autumn and, if the season be mild, will winter in North Germany, but if otherwise it passes further on, sometimes appearing in Galizia, Bohemia, Austria, Switzerland and Upper Italy. It comes to Holland and Belgium every autumn in numerous bands, which pass on to Picardy and Normandy: some stray even further south, but the bird is rarer about Paris, and only occasionally reaches Provence and Savoy. It has not been heard of in Portugal, but has been obtained in the south of Spain—Murcia and Andalusia.

The bill in summer is of a pale yellowish flesh-colour: the irides hazel: the lores dusky; the feathers immediately above the bill, and above and below the lores and eyes, are light reddish-ochreous; the rest of the head, ear-coverts, and upper parts generally, including the upper tail-coverts but excepting the rump, dark brown, edged with light ochreous; the tertials and wing-coverts are likewise tipped with the same, and the latter thus exhibit two bars across the wing; primaries and secondaries very dark brown, five of the former having the outer web narrowly edged with white; the rump rich purplish-red, in some examples almost scarlet; the tail dark brown, the four middle and the outer pairs being narrowly edged on the outer web with greyish-buff, and the remaining three pairs with white, while all have the inner web more or less margined with greyish-white; the chin and throat are of a rich ochreous, which becomes paler on the breast and flanks, where it is mottled with ill-defined streaks of brown, and nearly white on the belly and under tail-coverts, the vent being tinged with brown: legs, toes and claws, very dark brown.

The red on the rump is in winter confined to the middle of the feathers, and at that season the bill is of a greyish-yellow, while the longer fringes of the feathers above give the bird generally a lighter and more mottled appearance.

The whole length is five inches and a quarter: from the carpal joint to the tip of the wing, three inches; the third primary is generally the longest but herein there is some individual variation, the second, third and fourth being sometimes equal, while the first is so small as to be easily overlooked.

The female wants the red colour on the rump, and is also lighter in colour above; the bill, less decidedly yellow at the base, is dusky brown at the tip.

Young birds have the bill pale greyish-brown and the feet light brown, otherwise they generally resemble the adult females, though their darker markings are lighter in colour and the white on the wings is less extensive.*

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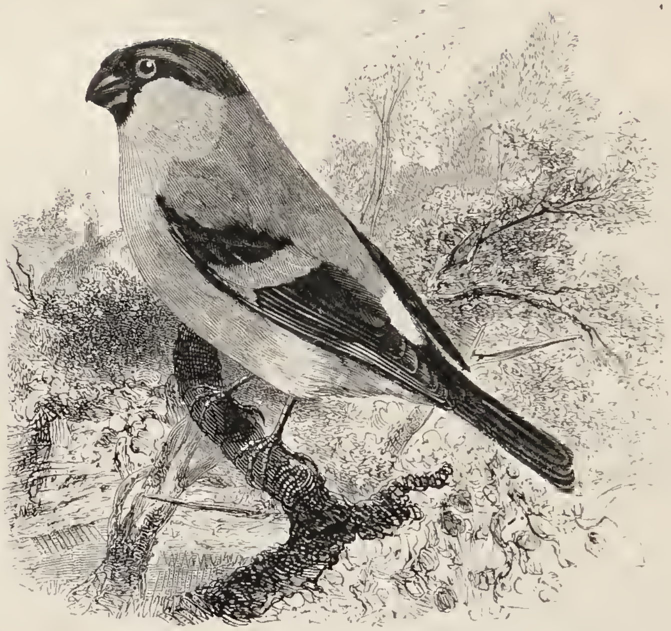
* The removal of the last four birds from the genus *Fringilla* has been so commonly approved that nothing need be said on that score, but the term which should be used for the genus so as to include all of them requires some explanation. *Linaria* has been employed by many writers, and so far as zoology is concerned it has priority; but, having been preoccupied in botany, since 1789, by no less an authority than Jussieu, it was disallowed. Before however this forestalling of the name had been recognized, Brehm proposed (Isis, 1828, p. 1277) to separate the Redpolls from the Linnets, retaining *Linaria* for the former and calling the latter *Cannabina*. If we were to follow him in keeping this distinction, *Cannabina* should certainly be retained in the restricted sense; but, as already stated, it is not intented here to alter the genera of *Fringillidæ* before adopted in this work, and that word, having been first applied with a distinctive meaning, cannot properly be used in one that comprehends the two groups. We accordingly come next to *Linota* under which the inventor designedly embraced both. In the Redpolls it may be observed that the crimson of the crown is permanent throughout the year, and the occipital feathers are erectile. In the Linnets the former is either wanting or usually assumed only for a season, and the latter lie smooth. The generic term *Ægiothus* is now commonly employed for the Redpolls when ranked as distinct from the Linnets.



Pyrrhula europæa, Vieillot*.

THE BULLFINCH.

Pyrrhula vulgaris†.

Pyrrhula, *Brisson*‡.—Bill hard, short, broad and thick at the base, bulging at the sides; culmen rounded; upper mandible considerably longer than the lower, and overhanging its point. Nostrils basal, supernal, round, more or less hidden by projecting and recurved frontal plumes. Gape slightly arched. Wings rather short, with the first primary finely attenuated and so small as to seem wanting, the third or fifth longest in the wing. Tail moderate, square or forked. Tarsus scutellate in front, covered at the sides by a single plate, stout and shortish. Claws moderately curved, rather short and strong.

The Bullfinch, though far less abundant than most of the other members of the family indigenous to this country, is yet too common a bird not to be well known all over these kingdoms. Shy and retiring in its habits, except at one season of the year, it is far more often heard than seen, and is seldom found associated with birds of any other species. It is most numerous in the wooded districts or those which are enclosed by high and tangled hedgerows, whence it makes its way to our shrubberies, orchards and gardens. Here it has earnt for itself an ill name beyond almost any other bird, for, while the Sparrow has many apologists and defenders, little has been urged in extenuation of the Bullfinch. Countless dissections have proved that the remains of insects are so rarely found in its crop or stomach that their entrance into its diet must be regarded as accidental,* while the regular way in which it will at times set itself to bite off the blossom-buds from one bough after another cannot be denied by its warmest advocate. Even so friendly an author as Selby writes (Nat. 1837, p. 208) that he was reluctantly obliged to make war on it every spring. Yet there is a very considerable choice used in its method. Some trees or bushes will be wholly spared, while others growing among them will be utterly stript. A like selection is exercised, as has been before noticed (vol. i. page 484), by the Blue Titmouse, but in that case the object is clear, while in the present it is hidden. It must not be set down to mere caprice: some cause doubtless exists and should be sought. When it is found we shall probably be able to judge the deeds of the Bullfinch with that knowledge of the circumstances which impartiality requires. Its so-called ravages, however, are confined to a very short period of the year—about a month or six weeks at the end of winter or beginning of spring, and, as observed long since by Knapp, the buds which produce leaves are passed over, and those containing the embryo of the blossom only eaten. Thus, "though the tree is prevented from producing fruit, yet the foliage is expanded as usual; but had the leaves, the lungs of the plant, been indiscriminately consumed, the tree would probably have died, or its summer growth been materially injured: we may thus lose our fruit this year, yet the tree survives, and hope lives, too, that we may be more fortunate the next." But it is certain that the whole crop is not always destroyed, and it has been suggested by Neville Wood (Orn. Text-Book, p. 61) and others that the operation of this bird is in some instances even beneficial, when, as not unfrequently happens, it only thins the superabundant buds, and the pruning the tree or bush thus receives (being just such as a judicious gardener, if he could reach the branches, would himself perform) increases the produce of the rest. At any rate, taking the most exaggerated view of the damage done, it may be safely said to be less serious than is frequently the effect of a single frost somewhat later in the season, and the deficiency of the fruit-crop due to this last cause is doubtless often wrongly ascribed to the Bullfinch. The buds of the gooseberry are the first to be attacked by this bird, and then generally those of the cherry, after which it turns to those of the plum, while those of the pear and apple come in for their share of its attention so soon as they are in a sufficiently forward state; but the peach and kindred trees are observed to be always neglected.*

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* Nouv. Dict. d'Hist. Nat. Ed. 2, iv. p. 286 (1816).

† Temminck, Man. d'Orn. Ed. 2, i. p. 338 (1820).

‡ Ornithologie, iii. p. 308 (1760).

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* It must be remarked, however, that Macgillivray, a good authority on such a point, says:—"Judging from the structure of its digestive organs, I should doubt that such crude vegetable matters as buds could afford it sufficient nourishment." Newman also asserts (Zool. p. 8649) that it renders important services in devouring the larvæ of *Chimatobia brumata*, a very common and destructive pest in gardens.

The charges brought against this bird are so serious as to demand the first and fullest consideration. There remains to be said that except during the short season when the buds are maturing its food is in no way detrimental to man, but rather the reverse, consisting as it does the greater part of the year of the leaves and seeds of countless plants, many of which are noxious weeds, such as docks, thistles, ragwort, groundsel, chickweed and plantain. As autumn ripens the various wild berries, those of the dog-rose in particular, they are greedily sought by it in winter. After March it is seldom seen out of the deep woodlands which form so secure a refuge for it, or at any rate of such shrubberies and plantations as are thick enough to afford it the desired seclusion, and soon begins to build. It has been said to produce but one brood in the season, but this seems doubtful since it frequently has eggs before the end of April, and eggs may be found unhatched at the end of June. The nest is a beautiful and very peculiar structure, formed of small twigs, chiefly of the birch, beech or hornbeam, deftly interlaid and intercrossed so as to become a very solid platform, in the middle of which is a recess curiously wrought with fibrous roots, some of them of considerable length but coiled and entwined together, those which form the lining being of course the finest, and the whole is usually placed on a leafy branch from four to six feet above the ground. The eggs are from four to six in number, of a greenish-blue, which though variable is never very deep in shade, speckled, spotted and occasionally streaked with purplish-grey and dark brownish-purple markings, generally distributed towards the larger end and frequently in a zone-like form. They measure from ·79 to ·67 by from ·57 to ·52 in. Notwithstanding its natural shyness and the mistrust it may well have of man, the Bullfinch nearly always permits a close approach when upon its nest; and will occasionally allow itself to be caught by the hand thereon.* Little doubt can exist that this bird, like the Nightingale (vol. i. page 314), owes much of its being able to maintain its numbers in this country to game-preservers, who, during the critical period of breeding, so jealously protect its woodland-retreats from disturbance.

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* Shooting Bullfinches, or other birds, as they sit on a branch, probably does more harm than they can do to the trees, for nearly every twig that is hit by a pellet of shot sustains a permanent injury, while that inflicted by the bird, however serious, is but temporary.

The young continue to associate with their parents through autumn and winter till the following spring; and so constant is the attachment of these birds to one another, that they are believed to pair for life.

The song of the Bullfinch has no remarkable quality of tone to recommend it, and indeed is so feeble as to be seldom heard except when one is close to the bird, which ceases from the performance on the least alarm. It is accompanied by much gesticulation—the feathers being puffed out and the head sloped on one side or the other, while the whole body throbs with each note, and the tail is swung laterally as though to mark the time. Both sexes are said to sing. The call-note, which is very frequently uttered, is soft and plaintive. As a cage-bird the Bullfinch is principally prized for its power of imitating a tune played to it on a flageolet or on what is called a "bird-organ." In Germany the art of teaching this species to utter unnatural strains, and of thus perverting an animal into an indifferent musical instrument, is found to be lucrative and is accordingly extensively practised.

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* The Bullfinch will breed in confinement, particularly in aviaries where there is sufficient space. Hybrids have been produced between this species and some of the other Finches.

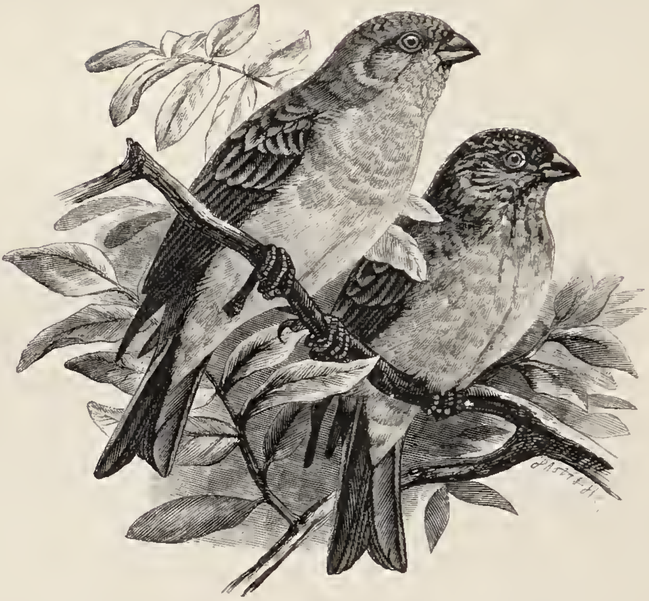
The Bullfinch is commonly dispersed in suitable localities throughout Great Britain, and, according to Thompson, it is met with in every county, though at the same time is rather scarce, in Ireland. It is not recorded from any of the Hebrides, and an example, obtained at Lopness in 1809, is the only one said to have appeared in Orkney. In Shetland, in October 1863, Saxby saw a female at Halligarth, which was afterwards shot and came into his possession. On the continent its distribution is somewhat hard to trace, for the form of Bullfinch which inhabits Northern and Eastern Europe is a decidedly larger bird, the *Pyrrhula major* of the eldest Brehm (Handb. Vög. Deutschl. p. 252), and the occurrence of the true *P. europæa* in Scandinavia, Russia or the Turkish dominions is very doubtful. It breeds however in Silesia, Bohemia and many districts of Germany, mostly in the hilly country, but towards the western limits of that empire also in the wooded lowlands, while in winter it seems to occur pretty generally. Following it further to the southward, it is also found in Styria and Switzerland, as well as in the beech-region of the mountains of Northern and Central Italy, whence it even occasionally penetrates to Sicily, and, though very rarely, has reached Malta. Loche found two examples in the market at Algiers (Expl. Sc. de l'Alg. Ois. i. p. 160). It inhabits parts of Holland, Belgium and the whole of France, and probably also the north, though it seems not as yet to have been observed in the south, of Spain. It is common in the north of Portugal, but is seldom seen in the southern provinces of that country.

In the adult male the bill is black : the irides dark brown: the lores and head above the eyes and ear-coverts deep black glossed with steel-blue ; nape, back and lesser wing-coverts, dark smoky-grey ; the greater wing-coverts glossy blue-black, tipped with light ashy-grey, forming a conspicuous bar across the wing ; the primaries dusky, the other wing-quills black, glossed with steel-blue, but the innermost tertial has the greater part of the outer web fine tile-red ; the rump pure white ; upper tail-coverts and tail glossy blue-black; the chin black ; ear-coverts, sides of the neck, throat, breast and belly, tile-red ; tibial feathers, vent and lower tail-coverts dull white ; axillary plumes and inner wing-coverts glossy greyish-white ; wings-quills glossy grey and tail-quills glossy greyish-black beneath : legs and toes purplish-brown ; claws dark brown.

The whole length is rather more than six inches ; from the carpal joint to the tip of the wing, three inches and one-eighth : the fourth, third and second primaries, successively shorter than the fifth, which is the longest in the wing ; the second and sixth being equal, and the first apparently wanting : the tail nearly even.

The female has the grey of the back mixed with brown, and beneath, where the male is red, is of a warm mouse-colour; the innermost tertial is slightly tinged with red ; the head, wings and tail, not quite so deep or so glossy a black.

The young on leaving the nest much resemble the female, but have the head coloured like the back ; the bar on the wing is of a light ochreous-brown, and the lower parts of the body are lighter and tinged with ochreous, especially on the belly. The black cap is assumed at the first moult, and the cocks about the same time, or soon after, lose the dull plumage of the breast which is replaced by the brightly-tinted feathers that characterize the adults of their sex.



PYRRHULA ERYTHRINA (Pallas*).

THE SCARLET GROSBEAK.

FIRST observed near Tomsk in Siberia by Messerschmidt, this bird was originally described and figured by Pallas as an inhabitant of Southern Russia, and in 1783 received from Latham (Gen. Syn. ii. p. 271) the name of Crimson-headed Finch. By subsequent British authors, however, it has been generally called the Scarlet Grosbeak or Scarlet Bullfinch. Its gradual extension westward to many parts of Europe is a curious fact, and it may now be justifiably included in this work as an occasional visitor to England.

The first unquestionable appearance of the Scarlet Grosbeak in this country seems to have been recorded by Mr. Wonfor † (Zool. s.s. p. 1918), and the statement was confirmed by Mr. Bond (*op. cit.* p. 1984)—a hen-bird having been caught on the downs near Brighton in September, 1869. This example was seen by the writer in Mr. Monk's aviary at Lewes, and lived there until June, 1876. On October 5th, 1870, another hen-bird was taken near Caen Wood in Middlesex, as chronicled by Mr. Bond (*op. cit.* p. 2383), and is now in his collection. It is very possible that other examples have been obtained in Britain, but the particulars given as to several supposed specimens leave it doubtful whether they were correctly determined to be of this species.

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* *Loxia erythrina*, Pallas, Nov. Comment. Acad. Sc. Imp. Petropol. xiv. p. 587 (1770).

† This gentleman indeed called it the "rosy bullfinch (*Pyrrhula rosea*)", but there is no doubt he was mistaken in so doing. The true Rosy Bullfinch, though an allied, is a very distinct species, not yet known to have been taken in Britain.

In habits the Scarlet Grosbeak is described by observers as bearing much resemblance to the Linnet, though it affects marshy coppices rather than the open country. So far as Europe is concerned perhaps the fullest account of its manners is that furnished to Messrs. Sharpe and Dresser by Dr. Taczanovski, who, writing from Warsaw, says that in that neighbourhood it generally appears about the middle of May, arriving singly and taking up its abode in bushes near water. The cock-birds are very restless, perching on the top of a tree or shrub, whence they utter a deep, clear and characteristic song, repeated about ten times, and then descend in search of food among the branches, but meanwhile they sometimes warble in a very low tone, and after an interval reappear to view and recommence their song.* In singing the bird raises the feathers of its crown and throat, and in the sunshine looks more beautiful than it really is. The food consists chiefly of buds and the seeds of various trees and bushes, but seldom those of smaller plants. The nest is loosely built, but regular and neat inside, being lined with fine shoots of plants, dry and often interlaced with a few hairs. It is placed in the fork of a bush and always well hidden in foliage. The eggs, from four to six in number, measure from ·76 to ·74, by from ·59 to ·54 in. They are of a deep greenish-blue, sparingly marked with well-defined, dark reddish-brown, or almost black, spots and specks, besides blotches of pale purplish-red. Some specimens are not unlike eggs of the Song-Thrush, though void of any gloss, and, of course, much smaller.

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* The note of the cock is said by Messrs. Seebohm and Harvie Brown to be pitched high and is by them syllabled *tu-wít-tu-tui*, which does not agree exactly with the rendering of Prof. von Nordmann *hi-u-ti-u hi-u-ti-u.* The former observers say that the note of the hen is "a low Greenfinch-like single *zh-zh-zh*" (Ibis. 1876, p. 115). Ménétries compares the song to a Chaffinch's.

There are several appearances recorded of what seems to have been this species, under various names*, in Germany towards the end of the last century, but these have to be regarded with suspicion; and, though more than one example occurred, says Bernhard Meyer (on the information of G. A. Germann) at Dorpat in 1803, the first about which no doubt can be said to exist is that given by J. F. Naumann, who states that in 1805 he saw, in the collection of Count von Mathuschka at Breslau, a cock-bird—one of a pair killed near that town—which was afterwards transferred to the Berlin Museum. The positive assurance of so excellent an authority as the same Naumann, that he himself met with this species breeding on Sylt in 1819, is of course entitled to all respect; but it is yet to be observed that not only must the extension of the bird's range so far to the westward at that time be considered very extraordinary, but also that, though he was told it was not rare and had for many years bred there †, it has never since been known to visit that island and only once to occur on the adjoining mainland‡. Still further its breeding at all in a locality so unlike that which it elsewhere seems to affect is by no means the least surprising thing in connexion with the incident.

Elsewhere in Western Europe this species has only been observed as a wanderer. It has of course occurred in Heligoland. An example is said to have been obtained near Tournay, another near Abbeville, and a third at Lille, Sept. 17th 1849; but it would seem to occur much more frequently in the south of France—the young especially appearing there almost every August or September, and has even been recorded from Spain. Italy has long been known to be within the range of its autumnal visits, and it appears to have reached Malta. In Germany it is said to have been once found breeding in the Queiss valley among the Silesian mountains. Further to the northward it has been met with on Gottland, and even, it is said, in East Finmark, where it is reported to have bred, but possibly further information on this point is required. However in Finland it is now recognized as an annual summer-visitant so high as Kuopio, where a pair or two may be observed every year, and further to the southward it seems to breed regularly, as at Helsingfors, near which town Mr. Dresser procured its nest and eggs, July 3rd 1858.

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* Much confusion has arisen between the present bird and the *Fringilla flammea* of Linnæus, a very doubtful species founded on one of Rudbeck's paintings, which it is now almost impossible to dispel.

† It seems possible that Naumann's informant may have mistaken a highly-coloured cock Linnet (*Linota cannabina*) for this species, but of course he himself was incapable of such a blunder.

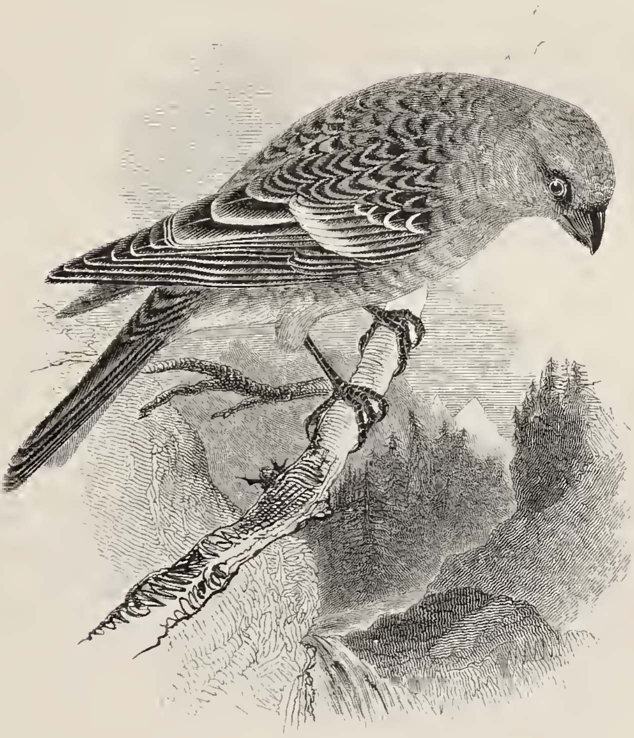
‡ This, according to Herr Rohweder (Vög. Schleswig-Holstein's, p. 9), was at Poppenbüll in Eiderstedt.

Passing over the Russian Empire, throughout which it seems to be found from Poland to Kamchatka, as well as the various parts of Central Asia that are suited to its habits, the Scarlet Grosbeak occurs in Persia, and is a regular visitant from October to April to the greater portion of India, extending to Assam and Arracan. In many localities it appears numerously, inhabiting alike gardens, groves and jungles, but in the extreme south it chiefly frequents bamboo-thickets. At the same season it also occurs in China and especially abounds there during the spring-passage.

In the fully-coloured cock the bill is yellowish-brown, lightest on the lower mandible: the irides are brown: the top of the head glossy carmine-red; lores and ear-coverts reddish-brown; nape, back and upper wing-coverts rich brown-lake, the feathers being reddish-brown at the base narrowly fringed with light rufous-brown; the other wing-coverts reddish-brown, broadly tipped and edged with light red so as to form two bars of that colour across the wing; wing-quills dusky brown edged outwardly with light red, which passes into rufous on the primaries; rump and upper tail-coverts glossy carmine-red tinged with brown; tail-quills dusky brown narrowly edged with light-red; chin and throat glossy rose-red, deepening into carmine towards the tip of each feather, and passing on the breast into a paler and duller shade of the same, which becomes still less deep on the belly and dies away, over the vent and on the lower tail-coverts, into a dull salmon-colour: legs, toes and claws reddish-brown. The whole length is about five inches and four-fifths; the wing from the carpal joint nearly three and three-eighths: tail, which is slightly forked, about two and a half.

In the hen the bill is brown: red is wholly wanting—the general colour above being dull olive-brown, darkest on the head and slightly mottled on the back, the feathers there having a darker middle and being (as well as the upper wing and upper tail-coverts) edged with greenish-olive; the other wing-coverts are dusky brown, edged, as on the tertials, with dull brownish-white; the quills are as in the cock, but edged with greenish; the lower parts generally are dull brownish-white, streaked with hair-brown—lightest on the chin, which is bounded by a brown stripe descending from either corner of the lower mandible, while a series of brown streaks begins on the throat; these increase in breadth on the breast, which is tinged with buff, and pass along the sides of the body to the flanks.

The young (and examples occurring in Britain may be expected not to have assumed mature plumage) resemble the adult female, but the olive-coloured edges of the feathers are yellower and broader. In this state the birds bear a very great likeness to the not uncommon hybrids between the Greenfinch and the Linnet, and at present it seems impossible to decide whether the bird described by Risso as *Fringilla incerta* was one of these crosses, an abnormal example of *Pyrrhula erythrina*, or a variety of the Greenfinch in which, from some unknown cause, all the yellow or green tints were wanting. Several specimens, agreeing more or less closely with the description of this supposed species, have been obtained in England, and the majority of them have been referred by Messrs. Sharpe and Dresser to the hybrid just mentioned; but, whether that determination be correct or not, there can be little doubt that the *F. incerta* is an imaginary species.



Pyrrhula enucleator (Linnæus*).

THE PINE-GROSBEAK.

Pyrrhula enucleator.

The Pine-Grosbeak is a very rare bird in this country, though many instances of its having been observed here are on record. Scarcely any of them, however, withstand a critical examination, and out of some two dozen, but four or five at most seem to deserve serious attention. The earliest of these is possibly that of a female, shot at Harrow-on-the-Hill, and mentioned in former editions of this work as being in the Author's collection, whence it has passed to that of Mr. Bond. Next there comes another hen-bird noticed in

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* *Loxia enucleator*, Linnæus, Syst. Nat. Ed. 12, i. p. 299 (1766).

1831 by Selby (Trans. Nat. Hist. Soc. Newcastle, i. p. 265) as having been shot at Bill Quay near Newcastle-on-Tyne, and at that time in the possession of Mr. Anthony Clapham, but now the property of Mr. Backhouse. Thirdly is a male example which the Editor is informed by Mr. Byne is in his collection, and that he believes it to have been killed near Exeter in the winter of 1854–5 and brought to his late father by whom it was preserved. In the next rank to these—the only presumably British-killed specimens known to exist, come two which were said in 1845, by Lubbock (Faun. Norf. p. 36), to have been obtained near Great Yarmouth and to have been then in a collection in that town. It appears, from the investigations of Mr. Stevenson and others, that they belonged to the late Mr. Miller and that, at the sale of his collection in 1853, they were lost sight of. To these two examples are probably referable the statements of Messrs. Gurney and Fisher (Zool. p. 1313) as to a pair of Pine-Grosbeaks supposed to have been killed near Bungay, and another pair at Raveningham in Norfolk—the notices of which may be fairly taken to concern the same individuals, but the story of their having a nest must be dismissed as in the highest degree unlikely. Then there is the case of an adult cock-bird said (Zool. p. 1025) to have been shot near Rochdale in February 1845, which was in the late Mr. Hamlet Clark's collection when it was seen by Mr. Bond, and no doubt can exist as to the specific determination of the specimen. Since the dispersal, however, of this collection its fate is unknown.

For one reason or other little if any trust can be placed in the remaining records of the appearance of this species in Britain.*

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* There are more than half-a-dozen instances in which it has professedly been seen in Great Britain, but nothing which can be called an act of identification has followed the observation. They are :—(1) A flock of about a hundred unknown birds that came to a hemp-yard in Pembrokeshire in Sept. 1694 as reported by a Mr. Roberts to Lhwyd (Phil. Trans. xxvii. pp. 464, 466) who suspected they were "*Virginia* Nightingals" (*Cardinalis virginianus*) but later writers suggested that they were Pine-Grosbeaks ; (2) The birds seen Aug. 5th, 1769, by Pennant (Tour in Scotl. Ed. 5, i. p. 132) at Invercauld in Aberdeenshire ; (3) A great number which, with Crossbills, for two years past had, according to Don's information in 1813 (Headrick's 'Gen. View Agricult. Angus' p. 43), done much damage to the woods of Glammis and Lindertis in Forfarshire ;

It is more than likely that in one case the birds seen were only common Bullfinches, in others that the Crossbill has been mistaken for the Pine-Grosbeak, while in others again that it has been confounded with the Hawfinch, and the result of a diligent but impartial investigation of the evidence on which are based the claims of the present species to be accounted "British" shews that it can only be considered a very occasional, and perhaps not always a voluntary, visitor; for, since the days of Edwards, it has been not uncommonly brought

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(4) A flight said by the Messrs. Paget (Nat. Hist. Yarm. p. 6) to have been seen on Yarmouth Denes in Nov. 1822; (5) One seen near Petworth in Sussex, by a Mr. Mellersh, a few years before 1849, as mentioned by Mr. Knox (Orn. Rambl. Ed. 3, p. 211); (6) One supposed to have been observed Aug. 20th, 1850, in Corriemulzie, Braemar, by Macgillivray (N. H. Dee Side, p. 403); (7) One believed to have been seen by Col. Drummond-Hay (Harting 'Handb. Br. B.' p. 114) at Dunkeld; and (8) Two seen, Nov. 8th, 1868, feeding on the seeds of an arbor-vitæ at St. Germain's in Cornwall, as Mr. Gatcombe informed Mr. J. H. Gurney, jun. (Zool. 1877, p. 248).

We then have a class of cases wherein specimens are alleged to have been killed in the British Islands, but about which doubt may be reasonably entertained. Of these are:—(1) One, recorded at third hand by Thompson (N. H. Irel. Birds, i. pp. 275, 276) and recognized from a very indifferent figure (Shaw and Nodder's 'Nat. Misc.' pl. 685) by a person whom there is no reason to suppose was a competent authority, is said to have been killed at the Cave-hill near Belfast in or prior to 1819; (2) A female stated by Fox in 1827 (Synops. Newc. Mus. p. 65) to be in his possession "through the favour of Mr. Yarrell," and to have been shot near Welwyn in Hertfordshire—a statement, however, which never having been publicly verified by the Author of this work must therefore be held erroneous; and (3) Two said to have been killed in Feb. 1848 in Ashdown Forest, Sussex, one of which, an adult male, was seen by Mr. Knox, who has now reason to disbelieve the statement. The statement as to a bird in Hampshire by Mr. Reeks (Zool. p. 9023) originated, as he has informed the Editor, in a mistake.

Lastly there are many records in which the species is named as having occurred in Great Britain, but obviously without discrimination. Among these may be cited:—(1) Kirkmichael, Dumfriesshire, by Burgess (Stat. Acc. Scotl. 1791, i. p. 60); (2) Washing Green, Midlothian, by P. Neill, it is supposed (Allan Ramsay's 'Gentle Shepherd, &c. with illustrations' 1808, i. p. 271); (3) Worcestershire, by Hastings (N. H. Worcest. 1834, p. 65); (4) Hulston, by Rylands on Glazebrook's authority (Nat. 1837, p. 352); (5) Kent, by Mr. P. Bartlett from Plomley's statement (Zool. p. 621); (6) Eccles in Berwickshire, by James Thomson (New Stat. Acc. Scotl. iii. Berwicksh. 1845, p. 53); and (7) Somersetshire, by the late Mr. W. Baker (Archæol. and N. H. Soc. Somersetsh. Proc. 1849–50, pt. ii. p. 144). Fuller details of many of these statements than it is here possible to give have been furnished by Mr. J. H. Gurney, jun. in the 'Zoologist' for 1877 (pp. 242-250).

hither as a cage-bird, and the localities in which it is said to have been procured are such as to raise a justifiable suspicion that on each and every occasion the victim was an escaped captive.

The food of this species seems to consist of the seeds and buds of many sorts of trees, but particulars on this point are still wanting. Except when under the stress of winter-weather, it invariably inhabits pine-forests, and hence we may perhaps presume that its chief sustenance is obtained from conifers. In summer however its diet appears to be occasionally varied by insects. Schinz (Nester und Eier, pt. ii. p. 100, Taf. 35, figg. 15, 16) described and figured two of its eggs, sent him by Gravenhorst from Breslau, where, as appears from Thienemann, they were laid in captivity. The writer last named also figured the egg correctly and said (Fortpfl. ges. Vög. tab. xxxvi. fig. 1, p. 418) that he had never compared but five specimens thereof, which were from Labrador and Lapland—the latter possibly obtained by Zetterstedt, who, so far as is yet known, must be deemed the earliest discoverer of the mode of breeding of this species, having met with several of its nests near Juckasjärvi, at the end of June 1821 (Resa genom Swer. och Norrig. Lappmarker, i. p. 243). Nothing however can be said to have been positively known by Englishmen on the subject until 1855, when Wolley, after two years of ineffectual search, succeeded in obtaining the nests and eggs of the Pine-Grosbeak. The Editor well recollects these treasures being for the first time brought to his late friend by the trusty and intelligent Lapp who had been especially employed to look for them and had at last gained the reward his efforts deserved.*

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* The story, told in 1808 by the elder Naumann (Naturg. Land- und Wasser-Vögel nördl. Deutschl. Beitr. iii. pp. 18, 19) of his having observed this species, twenty-two years before, breeding in his own coppice at Ziebigk in Anhalt, is evidently fabulous. He first described the incident in 1797 (*op. cit.* i. pp. 61, 62) as referring to a Crossbill, which from the particulars he gives is just as unlikely. In 1824 his son (Naturg. Vög. Deutschl. iv. p. 416) not unnaturally stuck to his father's later opinion, but without corroborating it by any further evidence of weight. Indeed he almost places his testimony out of court, since in the same page he misquotes Bernhard Meyer's description (Vög. Liv- und Esthl. p. 77) of the nest and eggs of the Greenfinch as those of the present bird, referring thereto in proof of his father's accurate observation! Particulars of Wolley's

The nest is generally placed some six feet or more from the ground in a young fir, and rests on the horizontal branches near to or touching the bole. It has an unmistakable likeness to that of the Bullfinch, and is a beautifully neat structure, "made externally of an extremely light network of thin trailing twigs laced into each other; some of which are more than two feet in length." This fabric "is suddenly changed into a compact bedding of bare roots, mixed with a few sprigs of hair-lichen, which form together almost a separate nest inside the outer network." Occasionally the long stems of creeping plants are used instead of twigs for the outworks, and Wolley saw one nest composed of the vagrant stalks of the delicate *Linnæa*, while dry grass sometimes almost exclusively replaces the roots of the ordinary lining. But, however different the materials, the style of architecture never varies and whoever has seen a Bullfinch's nest can form a very just idea of that of the Pine-Grosbeak—the latter however, as is natural, being considerably larger. The same may be said of the eggs, which are commonly four in number, and, measuring from 1·1 to ·91 by from ·74 to ·67 in., may be described as exaggerated Bullfinches', being of a deep greenish-blue, speckled, spotted or blotched with purplish-grey or dark brownish-purple. The markings, especially of the former colour, are seldom well defined and often much suffused, in which case a brownish tint is imparted to the whole shell, and the darker colour is often spread in the form of large irregular blotches; but there are eggs in which these are remarkably well defined.

The Pine-Grosbeak inhabits the conifer-zone of the northern parts of both the Old and the New World, seeking, we may presume, in either Region a lower latitude during winter. That in Europe it does so is evident, for towards the southern extremity of the Scandinavian peninsula it appears yearly, and sometimes in considerable numbers. Nevertheless it is only induced by very severe weather to cross to Denmark, and but

rediscovery were given, in 1856, by Mr. Hewitson who also figured the eggs (Eggs Br. B. Ed. 2, i. p. 210* pl. liii.*), and later in still greater detail by Mr. Dresser in his admirable work.

a single pair seems to have been noticed in Heligoland. As to Holland and Belgium there is little to be said, but it is recorded as of casual occurrence in France and has even been killed so far to the southward as Provence. Its appearance in Italy has also been asserted, but this has to be considered doubtful. Throughout Germany it would seem to have been observed more often, and even to have visited the south of the western part of that country occasionally, yet, however suitable its pine-forests might be, there is no reason to suppose that this bird ever abides there. It has been said to shew itself in Germany more frequently of late years than formerly; but though this may be the case there is insufficient evidence to that effect. Further to the eastward it occurs oftener, and we have G. A. Germann's testimony, first published in 1815, by Bernhard Meyer, that in the winters of 1790, 1793, 1795 and 1805 large flocks came about Dorpat, generally arriving in October and staying till the middle of December. It works its way however into Bohemia and Hungary—possibly into Transsylvania also, but of this proof is wanting. It is found almost throughout the whole breadth of the Russian empire (suitable localities being of course understood); but, though its limits to the northward are unquestionably bounded by the fir-forests, its southern range is unknown. It does not seem, however, at any time to cross the open country, and has never been observed in the Himalayas nor in their prolongation in either direction, and it would appear to become scarcer towards the east, though it is recorded from Udskoj-Ostrog. Its occurrence in China or Japan cannot be asserted, but there may be a presumption in favour of its occasionally reaching both countries. In North America likewise it is found in the pine-woods from the Pacific to the Atlantic. Here again we may well suppose its northern range to be conterminous with that of the conifers, but how far to the southward it extends is as yet uncertain—Leavenworth in Kansas seems as yet the lowest point it has reached. The fact however must be noticed that by some Transatlantic as well as European ornithologists the American Pine-Grosbeak is considered to be specifically distinct from our own. In appearance there seems to be no constant difference between the birds of the two continents, and in habits certainly none, but such eggs of the American form (if that expression may here be used) as the Editor has seen are invariably smaller than those of the European, though according to some writers the reverse is the case as regards the birds, which Mr. Dresser, after comparing many specimens, regards as specifically identical.

North America, before Wolley's sojourn in Lapland, was the country in which the habits of the Pine-Grosbeak had been most attentively studied, and Audubon has given some interesting details of those of the Transatlantic form—its smooth and undulating flight, its fondness of bathing, its progression by short leaps and its tameness—whether at large or in captivity, but above all its rich, clear note, none of which, however, point to any difference from the European bird. Few naturalists or none have had better opportunity for observing the manners of this species than Wolley, who lived so long among its haunts that he became thoroughly familiar with it, while most of those persons who have written on the subject have only known the bird as a winter-migrant or have even judged it from its behaviour in a cage. Our regret must therefore be great that he did not live to tell its history in his own graphic language as his intention was. Possessing much of the retiring character of the Bullfinch, the Pine-Grosbeak is, when at home, far less often seen than heard, for its clear notes attract attention while it is only to be descried after some search, since it does not commonly shew itself on the outside of the tree on which it is perched as do the Crossbills which hasty observers have doubtless often mistaken for it; and, almost always a tame, unsuspicious bird, it has acquired a reputation, quite undeserved, for stupidity. The call-note of the two sexes is much alike, yet an acute ear can unfailingly distinguish them, and that of the hen is at times repeated with variations sufficiently often to attain the dignity of a song.* The cock in the early spring will indeed mount to the summit of a fir, and thence utter his melody, chiefly at sunrise and sunset, till as the days rapidly lengthen darkness ceases and his evensong and mattins are blended. In general, however, he keeps with his mate among the thicker boughs, and there warbles, unseen without close scrutiny. Nor does he often indulge in those desultory flights that are so remarkable in the Crossbills. The adults seem seldom to wander from their home, and it must be chiefly the young that form the migratory bands which are said to have appeared in various parts of Europe. Herr Collett has furnished Mr. Dresser with a good account of the habits of these northern visitors, which agrees with that of American observers as to the ease with which, by one device or another, they may be entrapped.

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* No naturalist seems to have given a clear description of the song of either sex, and as the Editor has not heard it since the year 1855, he will not attempt one from memory.

In the male, as figured, the bill is dark brown, the base of the lower mandible paler; the irides hazel: the frontal plumes and the lores dusky black; the whole of the head, cheeks, ear-coverts and nape glossy vermilion-red; the feathers of the back and scapulars greyish-black, with broad red margins, which become yet broader on those of the rump and the upper tail-coverts, so as to produce an almost continuous red surface; the wing-coverts and wing-quills greyish-black, the former broadly edged outwardly and tipped with white, tinged with red, the latter narrowly edged outwardly with dull white, which is tinged with red on the proximal part of the primaries and outer secondaries; tail-quills almost uniform greyish-black, very narrowly edged with a lighter shade, tinged near the base with red; the chin, throat, breast and sides, vermilion-red, but the feathers grey at the base; the belly, vent and lower tail-coverts, light grey, the feathers sometimes streaked with dusky and tipped with white; wings and tail beneath, slate-grey: legs and toes blackish-brown; the claws black.

The whole length is eight inches; from the carpal joint to the tip of the wing, four inches and a half: the third and fourth primaries nearly equal and the longest in the wing; the second shorter than the fifth; while the first is apparently wanting: the tail is slightly but decidedly forked.

The adult female a good deal resembles the adult male, but entirely wants any red colour, that being replaced by a more or less golden-yellow (tinged in places with green) except on the back which is of an almost uniform dark slate-grey, and there is but little trace of yellow on the rump and flanks.

The female killed at Harrow has the bill orange-brown; the irides hazel: the head, ear-coverts and nape honey-yellow; back and scapulars slate-grey; rump and upper tail-coverts honey-yellow; both sets of wing-coverts, and all the wing-quills greyish-black, edged and tipped with white, without any red tinge; tail above, uniform greyish-black; all the lower surface uniform ash-grey: legs, toes and claws, dark brown.

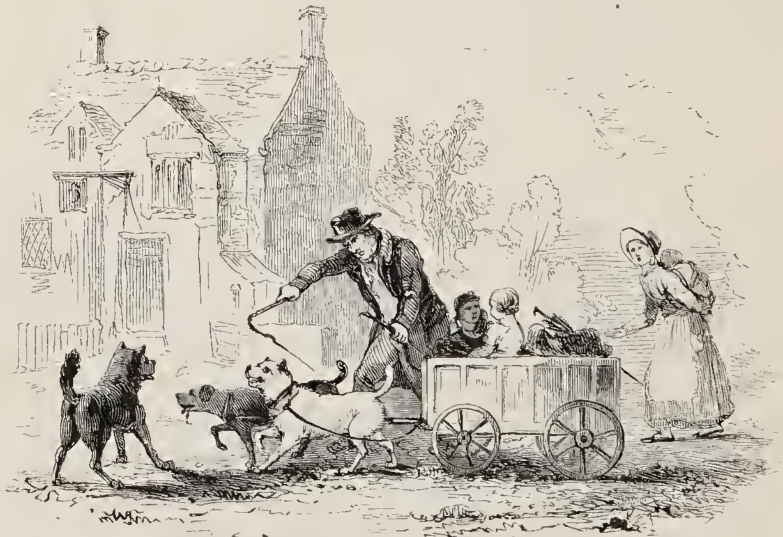
This bird was considered to have been in the plumage assumed after the first autumnal moult. The cock of the same age is very similar, but the yellow of the head, nape and rump is more or less strongly tinged with red, and the breast is clouded with yellow.

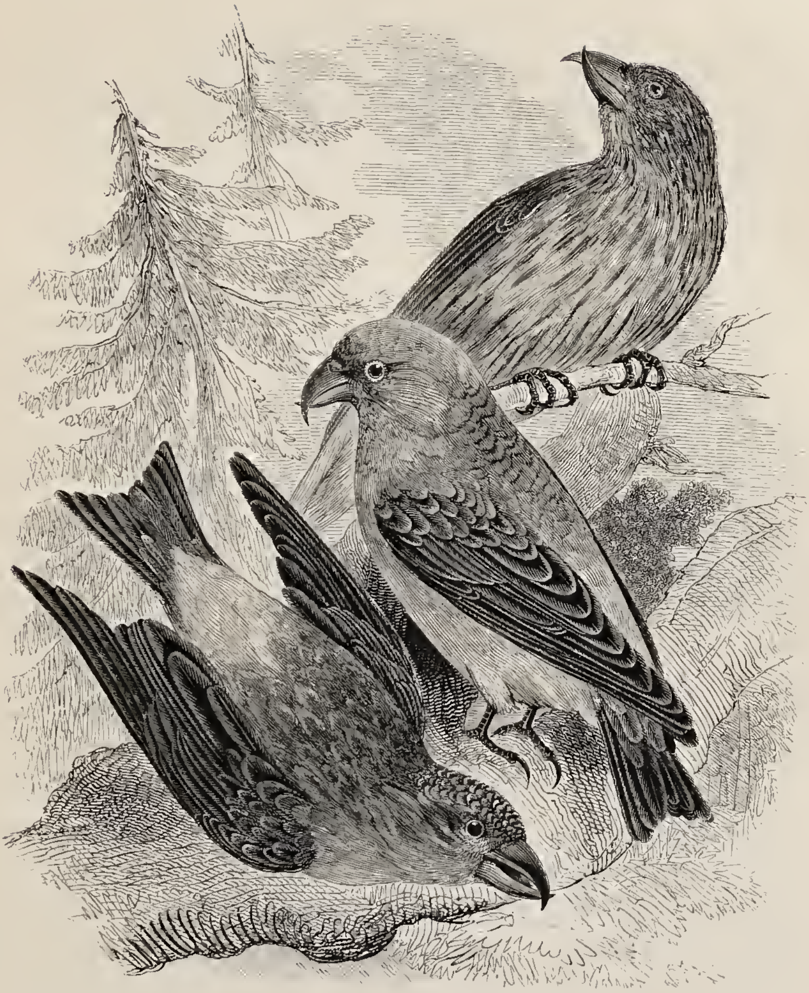
The nestling also seems to resemble the hen, but the dull grey has only a slight green tinge, and that chiefly on the head and rump; while the wing-feathers are edged and tipped with grey instead of dull white.

Respecting the sequence of the changes of plumage which obtains in this species much has been written and much of it erroneously. Especially mistaken are those who observing what takes place in caged birds infer that the same is the rule for birds that are at liberty. Though the cause has not yet been fully explained, it is certain that some groups of *Fringillidæ* never assume their brightest colours in captivity. Among such are the species of the genus *Linota*, as the term is used in this work. Probably also the species last described and the present certainly is subject to the same disability, as are the Crossbills, an account of which is to follow. It is perfectly well known that a cock Pine-Grosbeak, however red he may be when caught, will in confinement lose his ruddy hues at the first moult, and, so long as he is a prisoner, never regain them—the red being replaced by a more or less bright tint of yellow or yellowish-green. Further notice of this peculiarity may be deferred until the changes which the Crossbills undergo are considered. Here it is only needful to observe that, though the cock Pine-Grosbeak has undoubtedly been found breeding with his glowing crimson suit undeveloped, there is no trustworthy evidence that this brilliant plumage is a mark of mere adolescence, from which he with age retrogrades into a less gaudy dress.

For the reason already assigned this species has been here left in the genus *Pyrrhula*. But most modern authors remove it therefrom, and, if their example be followed, the generic term *Pinicola*, instituted by Vieillot in 1807, should most likely be used for it. The preceding species is also commonly separated from *Pyrrhula*, under the generic name *Carpodacus* applied to it by Kaup in 1829. It is here placed in *Pyrrhula* since it manifestly differs less from the Bullfinch than the Pine-Grosbeak does.

The vignette represents what is happily no longer to be seen in this country. It is much to be wished that prohibition could be extended to all cases of the misapplication of the powers of animals, including the education of "piping" Bullfinches.





Loxia curvirostra, Linnæus.*

THE CROSSBILL.

Loxia curvirostra.

Loxia, *Linnæus*†.—Bill hard, strong, thick at the base, much compressed towards the tip, the lower mandible curving upwards and its point crossing that of the upper mandible. Nostrils round, basal, supernal, hidden by thick projecting bristly plumes. Wings long, pointed; the first primary very small, the

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[*] Syst. Nat. Ed. 12, i. p. 299 (1766).

[†] *Loc. cit.*

second generally the longest. Tail short, forked. Tarsus short and stout, scutellate in front. Toes short and stout. Claws moderately curved, short and stout.

The history of the Common Crossbill is still involved in some obscurity, for—though it is now ascertained to breed yearly in some parts of Scotland and in England frequently—the origin, whether native or foreign, of most of the examples so often yet so irregularly observed in the southern kingdom is questionable, and, as will by and bye appear, there is a great divergence of opinion as to the sequence of the plumages it assumes. With us it is most commonly seen in flocks between the latter part of June and the beginning of February—the summer-flocks being family-parties composed of the parents and the young which keep together until, having exhausted the supply of food in any particular place, they ordinarily leave it for another district. Several instances however are known, and one is especially recorded by Hoy (Mag. Nat. Hist. vii. pp. 54, 55 and ser. 2, i. p. 117), in which the same birds have been closely watched and found to remain until May, while Mr. Joseph Clarke states (*tom. prox. cit.* p. 166) that the species was seen for more than twelve months in plantations near Saffron-Walden in a garden of which town the same naturalist says that a pair built a nest. White of Selborne, in 1773, noticed its annual appearance about midsummer at Ringmer in Sussex. Lewin, in July 1791, shewed Latham a pair of old birds and a young one shot in his garden, while others of the brood still frequented the spot, and in August of the same year a hen-bird, with a bare breast as if she had been sitting, was shot at Erith, according to the naturalist last named, who also, in a contribution to the edition of Pennant's 'British Zoology' published in 1812, stated that a pair built a nest near Dartford in Kent, but no eggs were laid therein, for the birds forsook it owing to the too great curiosity of visitors. Bullock is said to have received the young from near Bath, early in July. According to Sheppard and Whitear a pair completed their nest, in March 1815, at Offton in Suffolk, but were unfortunately killed by a Hawk. Another pair, however, say they, built in a fir at Livermere in the same county, and succeeded in rearing their young several times. Mr. Earthy mentions (Essex Literary Journal, Jan. 1839, p. 90) having heard that the Crossbill bred in Orwell Park, near Ipswich, in 1822. In June 1821, Selby obtained many examples in Northumberland, and remarked that the denuded state of the breasts of the females shewed that they had lately been incubating. Knapp also noticed the same condition in a female killed in Gloucestershire, and in truth hardly a year passes in which similar observations may not be made. Mr. Hewitson in 1837 figured an egg of this species (Brit. Ool. pl. cxxxiv.) which had been taken in the summer of 1829 from a nest in a larch-tree at Boynton in Yorkshire, and supplied to him by Arthur Strickland. The late Miss Anna Gurney in her natural-history notes, since published, records a Crossbill's nest at Sherringham in Norfolk in April of the year last mentioned (Trans. Norf. & Norw. Nat. Soc. ii. p. 19); and Mr. Hancock states that a nest with the young was found at Hesleyside in Northumberland July 15th, 1838.* From this both parents and young were shot, and one of the latter is in his collection. In the following year the Author received from Mr. H. L. Long a nest, two eggs and a nestling of this species which had been procured in the Holt Forest, near Farnham—all of which specimens were exhibited to the Zoological Society soon after (Proc. Zool. Soc. 1839, p. 60), and that gentleman states (Mag. Nat. Hist. ser. 2, iii. pp. 236–238 and 311) that after having a diligent watch kept three nests had been met with there in the early spring of 1839. In the same year two nests of the species were seen by Mr. J. Brown (*tom. cit.* p. 310 and Hewitson, 'Eggs Br. B.' i. p. 170) in Gloucestershire.

Up to about this time it was presumed that owing to the greatly-increased extent of fir-plantations the Crossbill was becoming far more numerous in England, but experience seems to shew that this has hardly been the case, and of late years no very considerable additions to the number of instances of its breeding in England have been made. Still cases occur from time to time, and, as mentioned by Mr. G. J. D. Lees (Zool. 1877, p. 254), a nest with four young was found on March 16th of the present year in a fir on the outskirts of Bournemouth in Hampshire. According to information collected by Mr. More it has been known to breed in the following English counties besides those already indicated:—Devon, Somerset, Surrey, Sussex, Herts, Leicester and Cumberland. Bedford may be added to this list.*

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* Mr. Hancock mentions two other instances, as he was informed, of the species breeding in that county or in Durham.

The visits of this species to various parts of our islands happen at irregular periods, sometimes with intervals of many years as regards any particular place; and some curious records of the appearance of large flocks have been preserved. The earliest known of these is by the chronicler Matthew Paris and has reference to the year 1251, thus:—

Anni quoq; sub ejusdem circulo, temporibus fructuum, quædam aves mirabiles, quæ nunquam in Anglia antea videbantur, in pomeriis maxime apparuerunt, alaudis parum majores, pomorum grana, & non aliud de eisdem pomis comedentes: unde dampnose nimis arbores suis fructibus viduarunt. Habebant autem partes rostri cancellatas, per quas poma quasi forcipe vel cultello dividebant. Partes insuper pomorum, quas relinquebant, fuerant quasi veneno intoxicatæ." †

In illustration of the foregoing, Wats, in 1640 the editor of Matthew's work, appended (Vita duorum Offarum &c. p. 263) a Latin version of an account of a similar visitation,‡ supplied to him in English by Sir Roger Twysden. The collections of that antiquary subsequently passed into the possession of the late Rev. L. B. Larking of Ryarsh, near Maidstone, who favoured the Author with a copy of the document * in the following terms :—" That the yeere 1593 was a greate and exceeding yeere of apples; and there were greate plenty of strang birds, that shewed themselves at the time the apples were full rype, who fedde uppon the kernells onely of those apples, and haveinge a bill with one beake wrythinge over the other, which would presently bore a greate hole in the apple, and make way to the kernells; they were of the bignesse of a Bullfinch, the henne right like the henne of the Bullfinch in coulour; the cocke a very glorious bird, in a manner al redde or yellowe on the brest, backe, and head. The oldest man living never heard or reade of any such like bird; and the thinge most to bee noted was, that it seemed they came out of some country not inhabited; for that they at the first would abide shooting at them, either with pellet, bowe, or other engine, and not remove till they were stricken downe; moreover, they would abide the throweing at them, in so much as diverse were stricken downe and killed with often throweing at them with apples. They came when the apples were rype, and went away when the apples were cleane fallen. They were very good meate."

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* Mr. More included Norfolk in his list, apparently by mistake for Suffolk, as Miss Gurney's record had not then been published. The instance is not solitary, for Lord Lilford has stated his belief to the Editor that it has several times bred in West Norfolk. As regards Suffolk, besides the nests mentioned by Sheppard and Whitear long ago, the Editor recollects the species being so continuously common for about two consecutive years (1846–48) at and about Elveden that he has not a doubt of its having bred there at that time, though no nest was found. It did not remain a resident in the district.

† Thanks to the good offices of his friend Mr. Lewis, F.S.A. the Editor has enjoyed the privilege of consulting the original MS. of this work now in the library of Corpus-Christi College, Cambridge. The page containing the passage quoted above (fol. 252) has in the margin a figure purporting to be a representation of one of the wonderful birds, but it is rude and not characteristic.

‡ Wats, it may be remarked, invites his readers to judge whether the species of bird be not the *Loxia* of Gesner and Aldrovandus.

It may have been this visitation that Childrey mentions in his '*Britannia Baconica:* or, The Natural Rarities of *England, Scotland, & Wales*' (London: 1661. p. 13), as follows— " In *Q. Elizabeths* time a flock of Birds came into *Cornwall* about Harvest, a little bigger than a *S*parrow, which had bils thwarted crosswise at the end, and with these they would cut an apple in two at one snap, eating onely the Kernels; and they made a great spoil among the apples."

From the many accounts of this species given in different works, it appears to have occurred in almost every English county. Depending mainly for food on the seeds of conifers and the pips of apples*, its movements are irregular beyond those of most birds, and it would seem to rove in almost any direction and at almost any season in quest of its staple sustenance. Want of space here forbids any statement of more than its greater visitations, as these have been set down. Edwards, writing in 1757, states that great flights had lately occurred near London. In June and July 1791, says Montagu, a bird-catcher at Bath took an hundred pairs of which the greater part were males and generally sold at five shillings each. In 1806, as appears from Mr. Dillwyn's statement, a flock inhabited a clump of firs in a sheltered Glamorganshire valley. In 1821, as recorded by many authors, Crossbills were numerous and flocks were seen in various parts of the country—particularly in the counties of Oxford, Worcester, Warwick and Northumberland. In 1828 they appeared in Westmoreland and the following year were numerous in Yorkshire. In the summer of 1835, according to Blyth, they were again plentiful, and so they continued in several districts from that time to 1839—among other instances flocks having been seen in Dorset in 1836, about Carlisle, says Heysham, in June 1837, and twenty having been killed by one person in Hampshire during the first week of August 1838. Coming to later years, they were very generally seen throughout the kingdom from 1846 to 1848, in the winter of 1853-54, again in 1855, in 1861, in 1866 and in 1868. But as yet nothing, otherwise than conjecturally, has been made out that will correlate their abundance or scarcity with other natural phænomena. This must be the work of future naturalists and physicists.

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* The Editor greatly regrets that he has been unable to see this document so as to ascertain its approximate date and possibly its author. Mr. J. W. Larking, brother of the gentleman named above, has kindly but ineffectually searched for it. Bewick in his later editions gave a retranslation of it into English from the Latin version of Wats.

In Scotland, as in England, the Crossbill is said to have been taken in every county, though not in any of the Outer

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[*] Hence one of the old names for this bird is "Shell-apple." Of late it has not been often observed feeding on apples, very possibly owing to the greatly increased growth of firs, and especially larches, throughout the country. In the days of its great depredations in orchards, there could have been few if any conifers in England. In Germany it does not seem to have been ever generally known as attacking fruit-trees.

Hebrides. According to Mr. Gray, it "breeds perhaps more numerously in the central counties than elsewhere," but he adds that many nests have been obtained every year near Dumfries, and that it is found in considerable numbers during the breeding season in Lanarkshire. Nests have also been several times known near Girvan, and young broods observed in Dumbartonshire. But this would seem to have been the case only of late, for Jardine, writing in 1839, though knowing that the birds remained throughout the year, states that he had "hitherto been unable to discover the nest or any traces of their having built." In the northern counties the same may be asserted. St. John said, in 1849, that the species had of late years become numerous in the fir-woods of Sutherland, and that it certainly bred plentifully in that county. In 1850 he, in company with Mr. Hancock, took, near the Findhorn, a nest whence the young (which they saw close by being fed by their parents) had flown and found at the same time a second nest with the remains of others. It was not till 1854 that the naturalist last named obtained the nest and eggs from Ross, since which time there can be no doubt of the species breeding regularly in many of the revived highland-forests. In the northern islands, it is, as might be expected, but an accidental visitor, though, according to Saxby as regards Shetland, in increasing frequency and numbers of late in proportion to the growth of young trees. This observer has some interesting notes shewing its disposition to adapt itself to such accommodation as these woodless localities afford, and among them none is more curious than its often retiring for the night to the stubbles, though as a rule it roosts in such trees and bushes as offer themselves.

In Ireland, Thompson remarked that it had long been known as an occasional visitant, and had bred there of late years. Many were recorded as seen in the county Down in 1707, and nearly a century later vast flights came over to the county Cork, and thence spread inwards and northwards so far as Dublin, making (as of old time in England) great havoc in the orchards. Another flight is supposed to have appeared in the county Armagh in 1813 and 1814, and again they visited Ireland in 1821, when so many overran Great Britain. Further particulars of other occurrences are given by him in detail, and especially note-worthy are those, with regard to the presumed breeding of the species in 1838 and 1839 in the counties Wicklow, Meath and Tipperary—the latter supplied by Mr. R. Davis, who received a young bird shot, in the act of taking food from an old male, at Ballibrado near Cahir. No nest however was found, and it remained for Mr. Blake Knox to establish beyond doubt the fact of its breeding in Ireland. This he did in 1868 (Zool. s.s. p. 1133) having been furnished by Mr. Roussel of Kilkea, county Kildare, with particulars of five or six pairs which had nests at that place in the spring of 1867.

It may be reasonably supposed that the great flocks which shew themselves from time to time in our islands have crossed the sea from the continent, but that the small parties which are more frequently though very intermittently observed are natives of Britain. The pleasure enjoyed by the true naturalist in meeting for the first time with a company of Crossbills has been related in his usual happy way by Mr. Knox*, but the pleasure hardly loses by repetition, for no one can watch the manners of these birds without being thereby greatly entertained. The easy skill with which they snap off a cone and grasp it, if it be of moderate size, in one foot, while with the other they secure their perch, and then, holding the cone firmly against the bough on which they sit, tear it to pieces and pick out the seeds it contains, must be seen to be appreciated. The larger cones are said to be rifled as they hang (though on this point there is some doubt),† or cut in two before they are dealt with, and at times a cone may be held in a convenient position by the fore-toes of both feet, the hind toes only clasping the perch. In the execution of these feats the birds display astonishing bodily strength and put themselves rapidly into almost every conceivable attitude — hanging back downwards, or extending themselves in any direction that may be necessary to attain their object. When they, as they sometimes do, feed on the buds of trees their movements are much slower and quieter, resembling those of Bullfinches while similarly engaged. The attention of a passenger is mostly drawn to the presence of a flock of Crossbills in one or other of two ways. He may notice the ground strewn with the fragments of enucleated cones, or—and this possibly the more often—he may hear a strange call-note, which has been syllabled *jip, jip, jip,* frequently repeated, and on looking up will find that it proceeds from birds that are ever and anon flying out from the branches of a tree, generally a conifer, and resettling upon it. Then he can stop to watch their actions carefully, for these birds are almost invariably tame and admit of a very close approach—so much so, indeed, that instances are not uncommon in which they have been ensnared by a running noose affixed to the end of a long pole or fishing-rod and passed over their head, or, touched with a limed twig, adroitly applied by the same means, fall helpless victims to the ground. The firing of a gun, though it may deal death to some of their numbers seldom has any other effect than momentarily to alarm the survivors, who after a short flight will return to the very trees on which they were before engaged, or at least to others close by. In one of these ways almost the whole flock may be procured if such be the desire of the captor. Unsuspicious as they commonly are, in fine warm weather they become more difficult to take, for then the whole flock will at times suddenly take wing and, after flying round for a minute or more uttering their loud call-notes, will alight on some tall tree near by and there sit, the cocks warbling to one another in an agreeable tone, while the hens join in the concert with their scarcely less musical chimes. This description however is that of the birds' habits in very early spring and does not apply to them in their limited family-parties somewhat later in the season. Then they are far less noisy, and such notes are only uttered by the leaders of the band as will evoke a reply from its younger members sufficient to keep the troop together.*

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* Autumns on the Spey, pp. 33–35.

† Lord Tweeddale, in a note to the Editor, states that the bird can carry about in its bill without difficulty the large heavy cone of a spruce-fir.

From what has just been stated it will be perceived that the seeds of various conifers—pines, firs and larches—nowadays supply the chief food of this species, but besides the pips of apples to which reference has been already made, the seeds of the rowan, or mountain-ash, appear from the observations of Macgillivray and Saxby to be at times laid under contribution. The berries of this tree it will even follow to the ground if it fails to secure the bunch at the first intention. The Editor has more than once known the buds of the elm to be eaten by the Crossbill and that at a season when they cannot be sought, as Saxby states they are in Shetland, for the sake of the aphides which gather on the underside of the leaves of this tree, though he is no doubt right in saying that such insects and those which infest the sycamore are greedily devoured by it. In confinement the bird soon becomes tame, and is a most amusing subject of observation, climbing like a Parrot with the help of its bill in any direction.† Introduced to hempseed, the Crossbill, like most birds, quickly takes to that attractive diet, shelling each seed deftly with the cutting edges of its mandibles, but even then its fondness for the seeds of the *Coniferæ* is not forgotten. Its efforts to free itself from captivity are so unceasing that a cage of very hard wood or of well-riveted metal is needed to keep it a prisoner, since it will busily ply its bill so as to whittle away the bars and bend an ordinary wire. Still it is by no means an impatient prisoner,* and is therefore often kept in confinement. The principal bird-dealers in London and other large towns are seldom without examples for sale. Its flesh too is esteemed for the table, perhaps mostly by those who cannot at the moment get a better viand, but in many parts of the continent it is certainly in request, and even in England it has been eaten with relish.

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* A most faithful account of the habits of the Crossbill was furnished to the Author by Mr. R. F. Wright of Hinton Blewit in Somerset, and printed at length in former editions of this work. So much has since been written on the subject, that it seems unnecessary at this time to give the words of this communication, the important parts of which are incorporated with other information in the above paragraph. In like manner it would be but a repetition here to insert the notice, formerly introduced, of a flock of Crossbills seen by Macgillivray (Br. B. i. p. 425), graphic and excellent as it is. The chief fact of which he was a witness will be immediately mentioned in the text. Owing to the wide range of the Crossbill in England there must now be but few ornithologists in the country who have not had the opportunity of personally observing it.

† This peculiarity, together with that of their holding in their foot the fruit from which they are extracting the seeds, has led some naturalists to consider the Crossbills allied to the *Psittaci*, and their representatives in the northern hemisphere, a belief to which very slight knowledge of Comparative Anatomy gives a positive denial.

The nidification of this species has been more or less fully described by many writers, though it has fallen under the observation of comparatively few ornithologists. For three centuries and more the Crossbill has been known to breed almost in the depth of winter or very early in the year—"*circa natalitia Christi*" even, as an old author† has it. But second broods are apparently not uncommonly produced, or if not certain individuals must delay their breeding-season for some months. Most of the nests observed in these islands have been found in March or April, but February is not too early nor May too late to look for them when the birds by their constancy to some particular spot give hope of their breeding there. Without being really sociable it often happens that several pairs breed in propinquity. The nest is generally built on the horizontal bough of a fir—though an apple-tree has also been recorded as a site, at an elevation varying from five to forty feet, and nearly always concealed by the foliage. In close woods, remarks Mr. Hancock, where the lower branches have fallen off it is necessarily placed high up, but where these (the trees having room) are retained, they are not unfrequently preferred.

The nest from the Holt Forest, exhibited in 1839 to the Zoological Society (*ut suprà*), was rather small in proportion to the size of the bird, measuring externally only four inches and a half across the top, and the cup but three inches in diameter. The outside was strengthened by a few slender fir-twigs: then was a layer of coarse, dry grass, and it was lined with finer grass and a few long hairs. It was lodged close to the stem of a Scotch fir, about thirty inches below its summit, at the base of the shoots of the year 1837, and supported by five or six ascending lateral branches which so concealed it that it could have been scarcely perceptible from the ground. The Gloucestershire nest (*ut suprà*) is described as built of dead twigs of the larch and spruce, within which it was formed of dry grass and tender stalks, compacted with wool and the whole lined with horsehair. Other nests from Scotland are neatly and firmly built—externally of fir-sticks and heather, with a few splinters of decayed wood. Mixed with these is a little fine grass interwoven with long vegetable fibres, and the lining is of white hair-lichen with some bits of moss and wool. The outward size of the nest varies a good deal, for it occasionally measures as much as eight inches in diameter, but its internal dimensions are pretty constant.

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* It has been known to build a nest and lay eggs in the aviary at Audley End as recorded by Mr. Clarke (*loc. cit.*).

† Schwenckfeld, 'Theriotropheum Silesiæ.' Lignicii: 1603, 4to, p. 253.

The eggs, in number four or, rarely, five, are very like Greenfinches' except that they are larger, measuring from ·94 to ·73 by from ·68 to ·57 in. Their colour is french-white, sometimes tinged with very pale blue, and they are sparingly speckled, spotted and blotched with reddish-brown of two or three shades, the lightest being in the form of suffused patches, and the darkest in that of well-defined markings—these last being often surrounded by a penumbra of lighter red, but occasionally dwindling to mere lines.

On the European continent the Crossbill inhabits almost all pine-forests from Lapland to Spain on the west and to Greece on the east. It is also permanently resident in Mauritania. Though more abundant towards the north, it yet breeds in nearly the extreme southern countries of its range, and its nest has been found equally on the Atlas and on Parnassus. Gifted with considerable power of flight, and impelled by casual dearth of food to exercise that faculty, it visits, though in the character only of a wanderer, spots that possess few or none of the requisites for its peculiar needs, and thus it has been obtained on Bear Island (lat. 74° 30′) by

Dr. Malmgren and at Malta by Mr. Wright. Its appearance therefore from time to time in places equally devoid of its natural supplies, but less far removed than those just named from its proper haunts, is easily explained, and in such districts it does the best it can to obtain a living from the seeds of various plants. An unsuccessful attempt has been made to regard examples obtained in the Balearic Isles (where it seems to be resident) as forming a distinct species (Journ. für Orn. 1864, p. 224). It occurs also not unfrequently in Sicily and in the Cyclades. Further to the eastward it is found across the whole of that part of Asia which is included in the Palæarctic Region—suitable districts being understood, from Smyrna to Japan, including the northern portions of China and Formosa—though indeed Chinese and Japanese specimens have been described as differing specifically (Proc. Zool. Soc. 1870, p. 437). Throughout this wide tract, however, there are few places in which its appearance can be deemed constant. Governed as its movements are by the imperious necessity of finding food, and food of a kind that frequently fails in any particular locality, it roves from one country to another as regardless of latitude and longitude as of heat and cold, breeding, as may be gathered from what has been above said, wherever it happens to be when the season comes round. Yet like almost every other animal it has its geographical bounds. So far as we are aware, neither Iceland nor any of the Atlantic islands knows its presence, though there seems no reason why so great a traveller may not find its way thither. The Great Desert of Africa of course puts a limit to its wanderings, and the firless plains of Egypt equally discourage its approach. The steppes of Tartary likewise interpose themselves as a barrier to its southern progress in Asia, and in the Himalayas we find its place taken by a distinct though nearly-allied form, *Loxia himalayana*. The common Crossbill of the New World has long been separated from that of the Old, and its separation, as *L. americana*, seems to be justifiable, on account of its smaller bill and, in the males, more scarlet plumage.

The plumage of the nestling-Crossbill obtained in Holt Forest, as before stated, is greyish-white over nearly the whole body, tinged with yellow and streaked longitudinally with dusky brown—the wings and tail being dark brown, the feathers edged and tipped with pale wood-brown. At this time, when the bird may be about three weeks old the bill is straight,* the lower mandible shutting within the upper. The legs and toes are flesh-coloured. An example undoubtedly bred in this country the same year (1839) and obtained near Winchester at the end of March, which, through the kindness of Mr. J. Leadbeater, I had the opportunity of examining, confirmed what has already been stated, and there was not the slightest indication as to which side either mandible would hereafter have been inclined.

The young, as seen in June and July, have the head, neck and all the lower parts of the body, as in the nestling, but the wings and tail are uniform dull brown. At this age, as observed by Blyth (Mag. Nat. Hist. ix. p. 635), they resemble a hen Siskin in plumage; but the sexes, as he afterwards stated (*op. cit*: New Ser. i. p. 451) may be distinguished by the cocks having the striations considerably more distinct, and more vividly contrasted, than the hens. The upper figure in the woodcut at the head of this subject represents a young bird. By September the young cocks have lost much of the striped appearance, and at their moult begin to assume the red plumage of maturity. Some do this at once, and this seems to be the normal mode though they do not so early develope their most brilliant hues. Others, possibly of a less vigorous constitution, have the red feathers mixed with yellow, or become dull orange—the effect of red and yellow combined, while others again put on a yellow or yellowish-green dress, and these are probably birds in which development is, from some cause, still further retarded. Absolute proof that this yellowish-green suit (which is that almost invariably assumed by caged birds) is ultimately replaced by one of red is wanting; but, though the wearers of this livery may not unfrequently be found breeding in it, there is good reason to believe that the change takes place.* As it is there is great variation in the brilliancy of the colour, whether yellowish-green, yellow, orange or red.†

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* Blyth says (Field-Nat. i. p. 130) he was informed by a man who saw a brood taken near Sevenoaks, in Kent, that the nestlings when about half-fledged "had the bill as much crossed as the adults." But Blyth did not assert this on his own authority and it is clearly a mistake. The fact, very suggestive from the evolutionist's point of view, that the nestling's mandibles are not crossed was noticed so long ago as 1806 by Necker.

A red male, that had completed his first autumnal moult, had the bill dull reddish-brown, darkest towards the tip of the upper mandible: irides dark brown: the head, rump, throat, breast and belly, tile-red; the feathers on the back mixed with brown, producing a chestnut-brown; wing- and tail-feathers, nearly uniform dark brown; vent, and lower tail-coverts, greyish-white: legs, toes and claws, dark brown. The middle figure of the woodcut represents such a bird.

A second male killed at the same time as that last described, had the head, rump and lower surface of the body, pale yellow, tinged with green; the back olive-brown; wings and tail like those of the red bird.

A third male, also killed at the same time, had the top of the head and the back reddish-brown mixed with dark orange; rump reddish-orange; upper tail-coverts bright orange; chin, throat and upper part of the breast, red, passing lower down and on the sides, to orange.

Red males moulting in confinement change to greenish-yellow, or sometimes to bright yellow, and hence has arisen the misconception of many ornithologists that the yellow colour was that of the normal older livery; but in captivity several instances are known of red and yellow examples changing back to dull brown, as dark as, or even darker than their early plumage. This is probably the effect of unnatural conditions such as particular food, and the want of air and light—all of which must exercise a debilitating influence on them as on other birds.

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* The Editor regrets being here again compelled to differ from the opinion of his friend Mr. Hancock (B. Northumb. &c. p. 50) on the subject of the change of plumage in birds of this genus as well as of the genus *Linota* (page 158). Unfortunately there has been a laxity on the part of observers in recording whether the objects of their observations have been caged birds or at liberty.

† Examples are mentioned in which the wing-coverts have bright red edges. Such birds are regarded by some as forming a distinct species—the *Crucirostra bifasciata* of C. L. Brehm—and one of them is figured by Bonaparte and Schlegel (Monogr. Lox. pl. 5). The Editor does not know of any example of this variety having been observed in Britain.

Young females, after their first striated dress, acquire a greenish-yellow tint on the crown, and the lower parts of the body, mixed with greyish-brown; the rump and upper tail-coverts of primrose-yellow, tinged with green; wings, tail and legs, as in the male. The lower figure of the group is from a female.

The Crossbill varies a little in size, measuring from six inches and a quarter to seven inches in length; the average extent of the wings from tip to tip, is about eleven inches; from the carpal joint to the end of the longest primary three inches and three-quarters; the third a very little shorter than the second; the fourth a little shorter than the third, and the fifth feather one quarter of an inch shorter than the fourth.

Besides specimens in my own collection, killed in July, September, November and January; others selected with reference to particular states of plumage, and various opportunities of examining examples kept in confinement, I have been favoured with many more from Mr. W. Wells of Redleaf, Mr. W. Browne of Cheam, Mr. Joseph Clarke of Saffron-Walden and Mr. H. Doubleday.*

The peculiar form of the bill in this bird, altogether unique among animals,† had long excited the attention of zoologists, and De Buffon, in 1775, especially distinguished himself by calling it (Hist. Nat. Ois. iii. pp. 449, 450) a defect—an error of Nature, which could not fail to be very inconvenient to the bird in feeding—though he had the direct evidence of several observers to the contrary.* This view was first strenuously opposed by Townson (Tracts and Observations on Natural History &c. London: 1799, pp. 116–123) who, having carefully studied the Crossbill's habits in Germany charged the account given by "the French Pliny" with being "as void of sound philosophy as of the knowledge of the facts," and "characterised by strong marks of error, carelessness and presumption." The observations of this naturalist are in nearly every particular apt and accurate, but much yet remained to be known, and it was not till thirty years later that the beautiful structure and mode of application of this wonderfully specialized organ was explained (Zool. Journ. iv. pp. 459–465, pl. xiv. figs. 1–7). The description then given, with a copy of its accompanying illustrations, is here reproduced in a condensed form, for, so greatly has the knowledge of zoological anatomy advanced since it first appeared, that much which was then wanted by even the scientific reader for its proper understanding is fortunately now unnecessary.†

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* The series of specimens at the Author's disposal was doubtless far larger than ornithologists of the time were accustomed to consult, but it may be remarked that the present state of science requires a much more extended comparison to obtain satisfactory results. Messrs. Sharpe and Dresser enumerate one hundred examples (from various localities) as having been examined by them, and the Editor must have handled nearly as many.

† As an occasional monstrosity, the result of overgrowth of the horny casing of the bill, the peculiarity has, however, been many times observed in other groups of birds and especially among the Crows. Such cases may well be compared to the malformation often seen in mammals of the order *Glires*, wherein the incisors often grow to inordinate length.

The specimen examined was one in which the upper mandible, or, to speak technically, the *maxilla*, curved to the left as will be seen by the vignette (figs. 1, 2), and this must be borne in mind, while following the description for the maxilla as often as not curves to the right.[*] When the bird is held in the hand, the point of the lower mandible, or *mandibula*, can be brought immediately below that of the maxilla, so as to touch it, but not beyond it towards the left, while on its own side the point passes easily some three eighths of an inch. The maxilla has a limited amount of vertical motion, the union between the nasals and the frontals being a flexible lamina. The transpalatal processes are considerably prolonged downwards (fig. 3, *a*) affording space for the attachment of large pterygoid muscles. The pterygoid itself (fig. 3, *b*) on each side is strongly articulated to the quadrate (fig. 3, *c*), affording firm support to the movable portion of the maxilla. The jugal (*d*), which is united to the maxillary in front, is firmly attached by its hinder end to the outer side of the quadrate. When therefore the last is pulled upwards and forwards by its own peculiar muscles, to be after described, the jugal on each side by its pressure forwards raises the maxilla.

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* De Buffon's special animosity on this point may be suspected to have arisen from an old legend (which however he does not notice) best known to English readers by Mr. Longfellow's version of Mosen's poem, to the effect that this bird acquired its peculiar conformation of bill and coloration of plumage from its efforts to release the suffering Saviour at the crucifixion. Schwenckfeld (*op. cit.* pp. 253, 254) has given this pretty fable in the "egregium Elegiacum carmen D. D. *Johannis Majoris poëtæ celeberrimi*" of some fifteen couplets, from which one may here be quoted:—

Fama est, has [*sc.* aves] rostro tentasse revellere clavos,
In cruce pendentem qvi tenuere Deum.

The whole poem has been lately reprinted (Notes and Queries, Ser. 5, vii. p. 505).

† It must be stated also that certain anatomical terms at that time in vogue have now no longer the same meaning as then, while others have completely dropped out of use. The Editor has therefore tried to replace them by their modern equivalents.

The lower process of the quadrate forming the condyle to which the mandibula is articulated is in very many birds somewhat linear from before backwards, admitting only vertical motion; but in the Crossbill this process (fig. 3, *c*) is spherical, and is received by the lower jaw in a hollow cup (fig. 5, *a*), so that the articulation possesses much of the universal motion of a ball-and-socket joint.

The mandibula is of great strength with prominent coronoid processes (fig. 5, *b*, *b*), to which, as to the whole outer surface of its hinder portions the temporal muscles are attached. The temporal and pyramidal muscles on the right (that being the side to which the mandibula inclines) are considerably larger than those on the left (figs. 1, 4, *a*, *b*). The pterygoid muscles (fig. 2, *c*, *c*) are also very large.

The muscles depressing the mandibula are three in number, but only one of them, the great pyramidal, is shewn in the woodcuts (figs. 1, 4, *b*), for this covers the other two. They all have their origin on the occipital bone and are attached to the mandibula behind the centre of motion, so as, by their simultaneous contraction, to lower its anterior part. The lower portions of the quadrates are, by this compression, pushed somewhat forwards, assisted by two smaller muscles not represented, but the position of which may be understood (fig. 3). One of them, which is small and flat, arises from the interorbital septum, behind the optic foramen, and passing downward is attached to the styloid process of the quadrate. The other is pyramidally shaped, arising also from the septum, but in front of the former, and passing downward and backward is attached to the pterygoid. Both these muscles in contracting pull the quadrate forward and thus raise the maxilla. The depressors of the lower jaw and elevators of the upper therefore act together to open the bill. To close it the temporal and pterygoid muscles raise the mandibula, while two slender slips (fig. 2, *d*, *d*) which extend forwards to the premaxillaries combine to bring them down. When lateral motion is required the great pyramidal on the right pulls the end of the mandibula, to which it is attached, backwards, the pterygoid muscle on the left at the same time assisting by carrying that side of the mandibula inwards.

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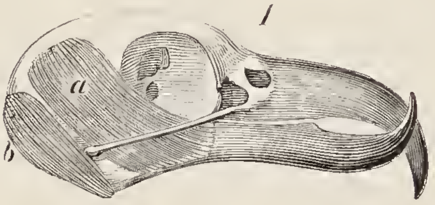
[*] The opinion, now generally acknowledged to be erroneous, used to prevail that the sexes in the Crossbill might thus be distinguished.

Having thus described these muscles, their peculiar action in the Crossbill must be related. The bird partly opening its mouth brings the points of the bill from their ordinary crossed position to be directly over each other. In this reduced compass they are inserted between the scales of the cone on which it is about to feed and then in the act of separating them still more widely the mandibula is drawn sideways and thus forces the scales asunder.

At this stage the tongue is brought into play. The anterior end of the hyoid has attached to it a narrow bony projection covered with horn (figs. 6, 7, *a*), about three eighths of an inch long, extending forwards and downwards, its sides curved upwards, and shaped at the tip like a scoop, while at the proximal end there are two small elongated processes, to each of which is attached a slender muscle (figs. 6, 7, *b*) extending backwards to the glottis, and these muscles by their contraction extend and raise the scoop-like tip. Beneath the articulation of this appendage is another small muscle (fig. 7, *c*) attached to its distal portion at one extremity and at the other to the hyoid. This by its antagonism to the former muscles (*b*) bends the extremity downwards and backwards, so that while the points of the bill press the scales from the cone, the tongue exserted by its own genio-hyoid muscle directs the scoop under the seed, which being thereby dislodged is conveyed to the mouth.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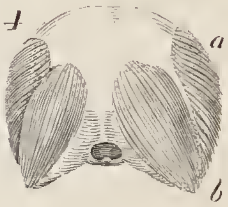
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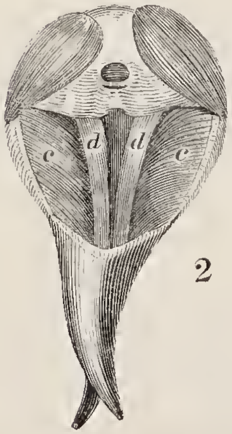
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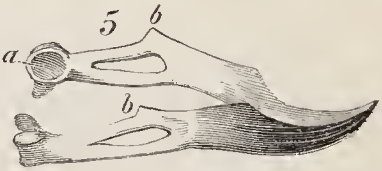
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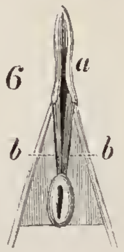
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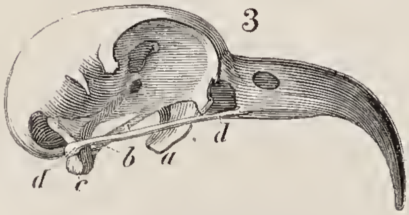
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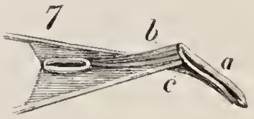
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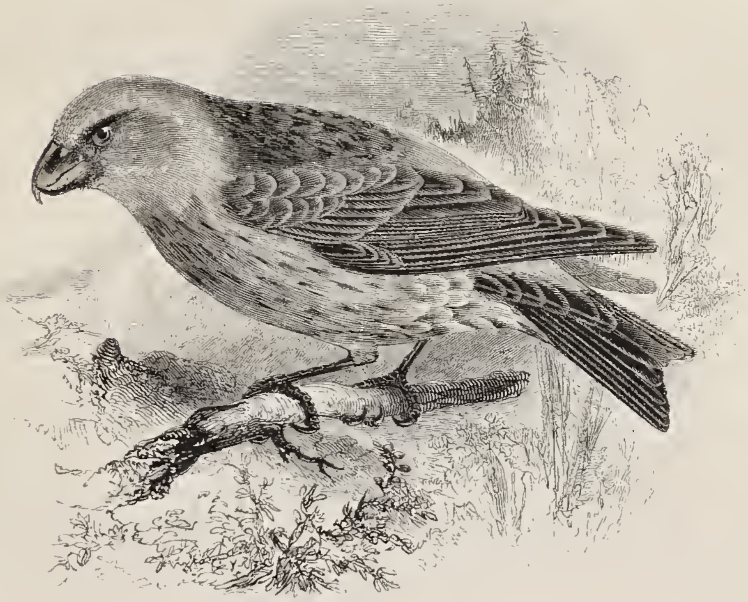

LOXIA PITYOPSITTACUS, Bechstein.*

THE PARROT-CROSSBILL.

Loxia pityopsittacus.

THE first notice of this bird's appearance in Britain is that of Pennant who, in 1766, after remarking (Br. Zool. p. 106) on the "two varieties" of Crossbill, of which Edwards had accurately figured "the lesser kind" that he had seen frequently, while the other was very rare, says:—"We received a male and female out of *Shropshire,* which were superior in size to the former, the bill remarkably thick and short, more encurvated than that of the common kind, and the ends more blunt." This larger Crossbill, at first considered only a variety of the common bird, has for many years received specific recognition from the most approved authors and its claim thereto need not be discussed here.

Since the time of Pennant, many examples of the Parrot-

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* *Loxia pytiopsittacus* (by mistake) Bechstein, Orn. Taschenb. i. p. 106 (1802).

Crossbill—for so it has come to be called in English—have been recorded as occurring in England, occasionally in Scotland, and once also in Wales. Mr. Harting (Handb. Br. B. pp. 114, 115) has carefully compiled a list of these notices, but the critical ornithologist will with justice forbear from trusting all of them. As already stated the common Crossbill varies somewhat in size, and it may be fairly presumed —there being little but size to distinguish the two forms— that a fine specimen of the ordinary bird has been occasionally set down by a sanguine collector, without any desire of deception on his part, for the rarer kind. Enough to say now that this last has been indubitably taken several times in Britain, for scarcely any useful end would be attained by investigating, even if that were possible, each reputed instance. The Editor has more than once had brought under his notice birds, supposed to be Parrot-Crossbills which were certainly not such, but he has seen sufficient examples, about which no reasonable doubt could be entertained, to justify the retention of the bird in the present work. Among these are two in the Museum of the University of Cambridge—one, apparently a hen, certified by a label in Mr. Jenyns's handwriting as having been killed at Blythburg in Suffolk in 1818, and the second, in the cock's red plumage, which was obtained of Mr. Head, formerly a bird-stuffer at Bury St. Edmunds, and said by him to have been killed at Saxham in the same county, in November 1850. In the possession of Mr. Thornhill of Riddlesworth in Norfolk, is also another red male, shot at or near that place a few years before (Zool. p. 3145). Other specimens are doubtless just as trustworthy though the Editor cannot speak of them from personal knowledge. Of these may be mentioned one said by Blyth, in his edition of White's 'Selborne' (p. 160, note), to have been shot in the New Forest in the autumn of 1835 or 1836. Several examples, as stated in the former edition of this work, were brought to the London market in March 1838, and were eagerly bought by those who were aware of their rarity. Two of these I examined. Mr. Bartlett was the purchaser of a third, and

I am indebted to him for being able to figure its sternum to show its difference in size from that of the common bird. Mr. Bond possesses three examples, one shot with others out of a flock near Lymington in March, 1842, and two obtained near Christchurch twenty years later. Newman saw one, said to have been killed at Harrow January 21st, 1850 (Zool. p. 2770); Doubleday records (Zool. p. 7759) three shot near Epping, September 20th, 1861; and Dr. Bree (Zool. p. 8032) had three brought to him, February 21st, 1862, which had been just killed near Colchester. According to Mr. Harting also a pair were shot at Southgate, in Middlesex, in November 1864, of which the male is now in Mr. J. H. Gurney's collection. In Scotland two were obtained, according to Jardine, in Ross (prior to 1833), one of which came into his possession and the other into Selby's, where it served to illustrate that gentleman's work as well as the later editions of Bewick's. Mr. Gray says he has a very characteristic specimen, which was killed with a stone out of a flock on the shores of Wemyss Bay in the spring of 1862. About the determination of all these examples no doubt need be felt.

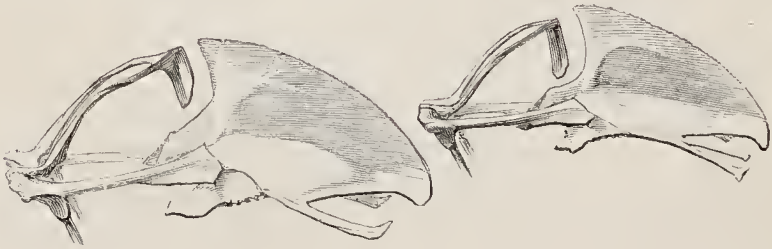
The habits of this bird, so far as has been ascertained, agree so closely with those of the commoner Crossbill that little needs to be said of them; but it is to be observed that in the parts of Sweden where it has been known to breed, its appearance scarcely ever coincides with that of *Loxia curvirostra*, and it is always the rarer of the two, feeding, according to Wheelwright who is herein corroborated by Taczanovski, more upon the seeds of the Scotch fir, while the smaller form is said to prefer those of the spruce. According to the Editor's experience the manners of the two birds do not differ, and the only fact in those of the larger form which he had not before observed in the smaller, was its constantly coming to drink and bathe (the season happened to be very dry) even in the foul water that had drained from a yard in which cattle were penned.

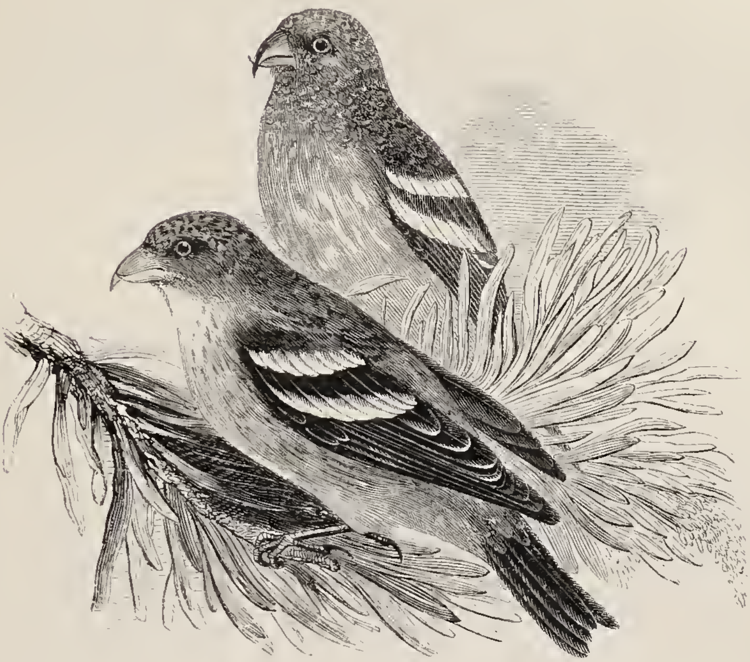
The geographical range of the Parrot-Crossbill is much more limited than that of the ordinary form. Its home seems to be the pine-forests of Scandinavia and Northern Russia, in which it breeds from the interior of Lapland to the middle of Norway and Sweden as well as to Livonia and Estonia. The elder Von Nordmann states also that it breeds numerously in the Ghouriel mountains, but it does not seem to reach the Ural. It appears, chiefly as a winter-visitant, in Poland and Germany, but is said to have been found breeding in the latter. It also occasionally reaches Holland, Belgium and France, besides Italy if authors may be credited, but is unknown in Spain, while its appearance in Greece is open to doubt. In all the details of reproduction it resembles *L. curvirostra*, but the nest and eggs as might be expected are generally somewhat larger—the latter measuring from ·95 to ·87 by from ·69 to ·62.

It is impossible to give any description of the plumage of this bird which would distinguish it from the commoner form, though the red is sometimes brighter. Wheelwright says he has found the cock breeding in bright yellow apparel, but that only once, and it seems to be subject to exactly the same laws as regards its change of colour as *L. curvirostra*. Herr Meves however mentions (Œfvers. Vet. Ak. Förh. 1860, p. 211) a hen bird in red dress. Mr. Dresser who has perhaps examined more specimens of both birds than any one else gives the following as the measurements of each:—

L. pityopsittacus:—Whole length from 6·3 to 7, wing from 4 to 4·3, tail from 2·7 to 2·8, tarsus ·75, culmen ·9, height of bill at base ·6, width of mandible at base ·5 in.

L. curvirostra:—Whole length from 5·7 to 6, wing from 3·7 to 3·9, tail from 2·5 to 2·7, tarsus from ·6 to ·65, culmen from ·75 to ·85, height of bill at base ·5, width of mandible from ·37 to ·4 in.





Loxia bifasciata (C. L. Brehm.*)

THE TWO-BARRED CROSSBILL.

Loxia bifasciata.

This white-winged Crossbill was described as a new species, in the year 1827, almost simultaneously by the eldest Brehm and by Gloger †, to the former of whom the priority of publication seems to belong; but ornithologists were slow to believe in its distinctness from the American form which had, as will presently be perceived, been long before known, and the differences between the two were for many years slighted or ignored, until the investigations of Professor Nilsson and Baron de Selys-Longchamps set the matter at rest. Brehm, however, to the last maintained that

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[*] *Crucirostra bifasciata*, C. L. Brehm, Ornis, iii. p. 85 (1827).

[†] *Loxia tæniopteru*, Gloger, Isis, 1827, p. 411.

his *Crucirostra bifasciata* was not exactly the same as Gloger's *Loxia tænioptera*, but wherein the distinction lay would puzzle the clearest heads, and Gloger himself several years afterwards, though retaining the name he had before given, reverted to the old notion of the specific identity of the European and American birds. The difference between them will in due time be shewn.

The instances in which the present form can be confidently stated to have occurred in Britain amount to about half-a-dozen, but in some of them small flocks were noticed, so that considerably more than that number of specimens has been obtained.* The earliest on record is that of a female shot at Grenville near Belfast, January 11th, 1802, as recorded by Templeton in a letter to Dawson Turner (Trans. Linn. Soc. vii. p. 309). The specimen indeed seems to have perished, but a coloured drawing of it was fortunately preserved, and helped Thompson (B. Irel. i. p.

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* Of instances in which "white-winged Crossbills" are said to have occurred without the distinction between the Nearctic and Palæarctic forms being observed or capable of later determination the following may be noted:—(1) Latham in a contribution to the posthumous edition (1812) of Pennant's 'British Zoology' (i. p. 428) says that, before knowing of the Irish specimen mentioned in the text, he had been informed of the bird having been met with in Scotland, but the report was too uncertain for him to notice; (2) Mr. Edward writing in 1859 (Zool. p. 6631) declared that one stormy winter about fifty years before a large flock appeared at Banff; (3) Hoy informed the Author that, some time prior to 1839, Mr. Seaman of Ipswich had shot one apparently near that town; (4) Bury in 1844 said (Zool. p. 643) he had been told of a pair of Crossbills with white bars on their wings having been obtained about six years before in the Isle of Wight; (5) the late Archibald Jerdon, as accurate an observer as his more distinguished brother, stated (Zool. p. 221) that he examined one, apparently a hen, shot in February, 1841, near Bonjedward in Roxburghshire; (6) in March 1845, Mr. J. Cooper had one alive which was caught near Birmingham, as Strickland informed the Author; (7) Mr. R. J. Bell mentions (Zool. p. 1247) a hen shot, while accompanying Fieldfares, at Micklcover near Derby in November 1845; (8) Salmon, in a contribution to Newman's 'Letters of Rusticus', published in 1849 (p. 158), notices a cock bird shot in Unsted Wood, Surrey, and then belonging to Mr. Nicholson of Waverley Abbey; (9) Mr. Sterland says that four were shot at Edwinstowe, in Nottinghamshire, in the spring of 1849; and (10) Mr. Prideaux in 1852 recorded (Zool. 3474) one at Taunton, without giving any date for it. Several of these particulars having hitherto been erroneously given by various authors, the foregoing list, which, so far as it goes, is believed to be accurate, may be found useful.

283) to its determination. Mr. Rodd in 1843 mentioned (Zool. p. 142) that one had been killed a few years before at Larrigan in Cornwall, and the specimen, which is still in his collection, he has since referred to the present form. In the autumn of 1845 a considerable number appeared in Cumberland, and a hen now in Mr. Hancock's collection was shot out of a flock of about fifteen near Brampton in that county, while at least nine more were obtained in the neighbourhood either at the same time or in the following year (Zool. pp. 1551, 1638). Of these last, two were lent for the use of this work by Capt. Johnson of Walton House. In May 1846, two or three were killed from a flock at Drinkstone, near Bury St. Edmund's in Suffolk* (Zool. pp. 1498, 2419), one of which is in Mr. Gurney's possession and a second, received at the time by Heysham, passed from him with one of the Cumberland specimens to Doubleday and thence to Mr. Stevenson's possession (Zool. s.s. p. 3778, note). Somewhere about the same time, it is believed, Doubleday shot a young bird in his own garden at Epping. Mr. Blake Knox has more recently recorded (Zool. s.s. p. 1376) a specimen obtained by him in Ireland in 1868. All these examples, so far as the Editor can judge, may be safely assigned to *L. bifasciata*.

This bird has at times occurred in considerable numbers in various parts of Europe whither it has strayed from its home in the northern and eastern parts of the Russian dominions. In 1792, one is said to have been taken at Stockholm, and this is perhaps the first known instance of its appearance in Europe; but, in 1815, Meisner and Schinz noticed in the Museum at Bern a specimen, said to have been taken in Switzerland, which was probably of this species. In 1824 the younger Naumann figured, as a variety of *Loxia curvirostra*, an immature example of the present bird (obtained presumably in Germany) being one of the only two he said he had ever seen. In the summer or autumn of 1826, however, a very considerable number appeared in central Europe, sometimes in troops of from twenty to fifty, which of course attracted some attention, particularly as has been already said, from Gloger and the eldest Brehm. Virtually this was the year of its discovery as an European bird, for the previous observations, in Sweden, Britain and Switzerland, had been almost entirely overlooked. How far this particular visitation (the head-quarters of which seems to have been in Silesia and Thuringia) extended cannot be said, but there is evidence of stragglers in the course of that autumn or of the following winter having reached the neighbourhood of Vienna, Munich, Nuremberg, Liege, Antwerp and Copenhagen. Possibly some even remained to breed, or else a second visitation followed, for in the severe winter of 1829, according to Von Kettner, it appeared on the mountains of the Murg valley in Baden. Since this time it has been observed in Hungary (Isis, 1843, p. 86), several times in Bohemia, and frequently in Germany, appearing, say Drs. Blasius and Baldamus, almost yearly in the Harz in company with the common species, and it is recorded also from Tyrol and the Bergamasco southward, while westward it has reached the neighbourhood of Caen in Normandy. It has also more than once visited Belgium as in September 1842, and November and December 1845, when flocks appeared. In February 1846 it was seen in Holland near Utrecht. Mr. Gätke has occasionally obtained it in Heligoland, where it is, however, very rare. It visited Denmark in October 1845 and December 1849, and was observed in Norway, in August 1840, October 1852 and in the autumn of 1858—each time in the botanic garden at Christiania. In Sweden it continues to come at uncertain times to Stockholm, near which city, as well as near Gottenburg and in Scania, it was especially observed in the autumn of 1845, and it has also occurred at Gefle, but is not yet recorded from any more northern locality in that or the sister kingdom. In Finland Magnus von Wright stated in 1849 that it had been of late years observed near Helsingfors, where the younger Von

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* From the fact of two of the specimens having been sent to a birdstuffer at Thetford, the neighbourhood of that town was inferred to have been the locality where they were obtained. The Editor well remembers them in his hands.

Nordmann obtained several examples, and in 1856 Mr. Dresser got many at Viborg; but, though J. von Wright procured it the following year at Haminanlaks, it is not mentioned by Dr. Malmgren as a bird of the Kajana tract.

In Russia it was apparently unknown till 1841, when Prof. Brandt announced it as of very rare occurrence in that country. In July 1848, Prof. Lilljeborg, however, found it in plenty near Archangel; but the experience of later travellers seems to shew that even there its appearance is fitful, and, though in some seasons it is numerous, years may pass without seeing it. When it does appear it seems to breed, and its song and beautiful plumage make it eagerly sought and highly prized as a cage-bird. The larch-forests of Siberia probably afford it a more certain residence, and in that country it is especially abundant, reaching to the Arctic Circle on the Jennesei, and having been met with throughout Manchuria to the Pacific. It has been also included among the birds of Japan; but seemingly on the evidence only of native drawings.*

As regards habits little difference has been observed between this and other Crossbills. Its call-notes however are said to be peculiar. The earlier observers, Brehm and Gloger, syllabled them by the words *krit, tütt, tütt* and *gätt, gätt* or *grätt, grätt*—all to be pronounced as in German. Baron de Selys, who has so effectually contributed to a better knowledge of this bird, says (Bull. Acad. Belg. 1846, pt. i. p. 331) that his attention was first drawn to it by its cry, which somewhat resembled that of a Bullfinch, and he had the pleasure of observing a flock for more than a fortnight on his property at Longchamps-sur-Geer. They preferred the seeds of the larch to those of other firs. Those that Prof. Lilljeborg saw near Archangel however haunted a wood chiefly of spruces where there were no larches. He says that the note seemed to him sharper than that of the common species. With respect to the nidification of the Two-barred Crossbill no details whatever have been given. The egg is exceedingly rare in collections, and the only specimen as yet figured was laid in a cage. A specimen in the Editor's possession, received through a trusty channel from the neighbourhood of Archangel, presents precisely the appearance of an ordinary Crossbill's egg and measures ·97 by ·66 in.

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* The skin of a white-winged Crossbill, formerly in the possession of Mr. Gould, purported to come from the Himalayas, and has been figured by Bonaparte and Prof. Schlegel in their fine 'Monographie des Loxiens' (p. 8, pl. 10) as a specimen of *L. leucoptera*, but as stated by the Author in the last Edition of the present work it belongs to *L. bifasciata*, and agrees with various examples taken in this country.

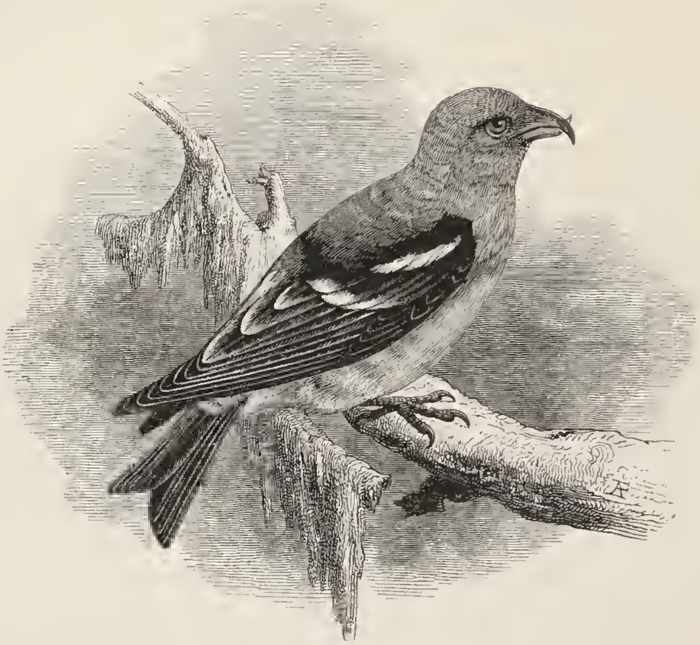
The adult male in full plumage has the bill of a dusky horn-colour: the head, neck, mantle and rump are brilliant light crimson-red, the dusky base of the feathers appearing in places and giving a mottled look to the whole; the scapulars and feathers of the back are dull blackish-brown, broadly tipped with the same crimson-red, as are also the upper tail-coverts, but in them the red is mixed with white; the wings are dark blackish-brown—the middle and greater wing-coverts dusky at the base and then pure white, or white tinged with pink, for more than half their length, forming two conspicuous white bands; the quills are narrowly fringed with reddish- or yellowish-white, and most of them are tipped with white—the tertials very broadly; the tail-quills are also dark brownish-black, edged with white, sometimes tinged with red or yellow on the outer fringe; the throat, breast and flanks are nearly as the head and greater part of the upper surface; the belly greyish-white; the lower tail-coverts dull white tinged with pink, each having a dusky base which runs into a pointed median stripe; legs, toes and claws, dusky.

In a male, which had been apparently kept in confinement, the head, back, breast and flanks are varied with bright yellow, forming a most gaudy combination of colours.

The whole length of the male is six inches and a quarter; the wing from the carpal joint three inches and three quarters: the height of the bill at the base from ·35 to ·45 inch.

The youngest bird seen by the Editor has much the same striated plumage as the common Crossbill at the same age—the white bars on the wings, which are then as conspicuous as in adults, of course excepted. The exact course of the change that follows is not with certainty known; but there is no doubt that much of the striated character is soon lost, particularly by the cocks, which appear to attain before or in their first autumn a greyish suit, suffused here and there by a rosy blush or a warm ochreous tinge. The hens commonly retain the striations to a great degree, while their general plumage inclines to green or greenish-yellow on the breast and rump. Except the white wing-bars there is little difference in style of coloration between them and the hens of the common species.

Confusion, however, of the present bird with its American representative must be guarded against. The differential characters are rather minute, but most of those assigned by various writers appear to be constant. Exception may be taken to the alleged difference in the red colouring of the cocks, the intensity and tone of which varies considerably and some European examples are quite as brilliant as any from America. The more constant differences may be thus summed up. The bird of the Old World is very decidedly the larger and with a more powerful bill, which is obvious even in young examples; and the scapulars and feathers of the middle of the back are much more broadly tipped and edged with brown or red. The tail also is rather less forked, but perhaps a better character is found in the fact that its feathers seldom lose their light margins, which indeed are often very conspicuous, while the American bird is almost as seldom seen possessing them. Further distinction has also been sought (Œfvers. K. Vet.-Ak. Förhandl. 1846, p. 40) in the proportional length of the toes and claws, but the examination of a considerable series of specimens casts doubt upon this as a character. It follows then that the general dimensions, and especially those of the bill, are alone to be trusted, though the presence or absence of the light margins of the tail-feathers, and in cock birds the colour of the scapulars and back, will in the great majority of cases decide the question at a glance.



Loxia leucoptera, J. F. Gmelin.*

THE WHITE-WINGED CROSSBILL.

Loxia leucoptera.

For a long time the only known form of Crossbill with white on its wings, this bird was originally described in 1783 under the above English name by Latham (Gen. Syn. B. ii. p. 108) who had received specimens from Hudson's Bay and New York. A few years later, the compiler Gmelin bestowed on it the scientific appellation it still bears and thereby forestalled its first describer's wish, not expressed till 1790 (Ind. Orn. i. p. 371), of calling it *Loxia falcirostra*. As has been said already it was not for many years after that the white-winged Crossbill of the Old World was recognized as distinct from that of the New.

It is not improbable that a specimen or more of American origin may have been among those white-winged Crossbills that have occurred in this country without being subjected to the eye of a critical ornithologist, and it is certain that with several writers professing to treat only of British or European species Western examples have done duty for Eastern; but there are three undoubted instances of birds, which agree in every respect with specimens obtained in America, finding their way to England or to English waters. The earliest of these was a hen, killed near Worcester in 1838, as communicated to this work by Strickland, and the specimen labelled by him being still in his collection at Cambridge there can be no doubt about its identification. Next comes a fine red cock, from which the preceding figure was drawn, exhibited at a meeting of the Zoological Society, Sept. 23rd, 1845, by Mr. E. B. Fitton who said he had found it dead and partly covered with wet sand in a crevice of some loose rocks on the shore at Exmouth, on the 17th of the same month, the wind being at the time south-west, and westerly gales having prevailed for some days (Proc. Zool. Soc. 1845, p. 91). The Author with Mr. Fitton examined this bird while in the flesh. On dissection it proved to be an adult male, and its stomach was empty. When some time after that gentleman went to New Zealand he kindly sent it to the Author and it is now in Mr. Knox's collection. The third example was bought alive in October 1872, by Mr. J. H. Gurney, of a man at Great Yarmouth who said that it had been caught on the rigging of a vessel which arrived at that port in October 1870. It had become very tame, and so continued after its transfer to Mr. Stevenson's aviary at Norwich, where it lived till December, 1874, having in the mean time been more than once seen by the Editor. It was a hen, and some particulars of its captivity have been published by both the gentlemen named (Trans. Norf. and Norw. Nat. Soc. 1872–73, p. 117; Zool. s.s. p. 4695). To these notices is appropriate the statement made to Mr. R. Gray by the late Dr. Dewar, to the effect that some twelve or fifteen years before, when on his passage from America, he observed great numbers of this kind of Crossbill crossing the Atlantic before a stiff westerly breeze. Many of the flocks alighted on the rigging and deck of the steamer which was about six hundred miles from the Newfoundland coast. He secured ten or twelve examples, of which one or two escaped as the ship neared the Irish coast and made straight for land. Two others flew out of their cage in the streets of Liverpool, and five were sent to Mr. Gray, with whom they lived for a few months. There have probably been many other men who like Dr. Dewar have helped winged wanderers across the Atlantic—with what success we may perhaps guess, though we shall never know, from the American element in our list of so-called "British" birds.*

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* Syst. Nat. i. p. 844 (1788).

Except perhaps in Heligoland, where it seems to have occurred, this Crossbill appears to be otherwise quite unknown in Europe, and continental writers are not wanting who deny that it has ever reached this quarter of the globe. Many years since the elder Reinhardt reported (K. Dansk Selsk. Naturvid. Afhandl. 1838, p. 92) his receipt of a dried specimen, apparently an adult male, which had been brought by an Esquimaux from the east coast of Greenland, and his son mentions (Ibis, 1861, p. 8) that in later years another adult male and three young birds, now in the Royal Museum at Copenhagen, were obtained in South Greenland. To that desolate country it is of course only a chance straggler, but in Newfoundland (where, according to Mr. Reeks, it is known as the Spruce-bird) it is common throughout the year, being most abundant during winter, when it gathers in flocks of from five to twenty, and feeds chiefly on the seeds of the *Abies alba*, as it does throughout the whole of its range, which stretches across the breadth of the continent from Labrador to Alaska. Richardson observed it in lat. 62° N. and thought it probably went as high as the dense forests of white spruce extend. It is recorded by Mr. Weiz as breeding at Okkak in Labrador (Proc. Bost. Soc. N.H. x. p. 267) and by Mr. Boardman as doing the like in winter at Calais in the State of Maine (*op. cit.* ix. p. 126). The only certain particulars, however, we have of its nidification are those given by Messrs. Baird, Brewer and Ridgway, in their 'Birds of North America', from a nest and egg taken, in 1868, by Dr. A. Adams at Frederickton, in New Brunswick. The egg is said to be "pale blue, the large end rather thickly spattered with fine dots of black and ashy-lilac", and to measure ·8 by ·56 in. The nest is described as being "deeply saucer-shaped, and composed of a rather thin wall of fibrous pale-green lichens, encased on the outside with spruce twigs, and thinly lined with coarse hairs and fine shreds of inner bark. Its external diameter is a little less than four inches, the rim being almost perfectly circular; the cavity is an inch and a half deep by two and a half broad."

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* Two white-winged Crossbills shot by Saxby at Halligarth in Unst, Sept. 4th, 1859, would seem from his partial description to have presented American characteristics. What became of the specimens the Editor does not know.

Though some examples winter in the Dominion, the majority seem to migrate southward as autumn approaches, and in the Eastern States of the Union to reach Pennsylvania, where, rare as their occurrence was in Wilson's days, they have since been found more abundantly (Proc. Ac. N. S. Phil. 1854, p. 203). In spring they mostly return to the north, and Audubon in May saw many on the rocky islands in the Bay of Fundy, and again encountered a flock while crossing the Gulf of St. Lawrence, all evidently journeying northward. This Crossbill was not observed in the United States to the west of the Mississippi until 1860, when it was found in June by Dr. Hayden on the Wind River Mountains, and west of the Rocky Mountains it has not been known to occur south of British Columbia. In behaviour it is like all the other Crossbills, and its tameness and pleasing song have been noticed by many transatlantic observers. Its note has been syllabled "wēēk."

In all its plumages this bird so closely resembles the preceding that a general description of them is rendered unnecessary. By colour alone it would seem almost impossible to distinguish the young of either sex, and the females of the one form, from corresponding examples of the other, except that in the bird of the New World the light edging of the tail-feathers is seldom visible, while in that of the Old this character is usually very conspicuous. The same difference obtains also in the adult males, while they may be besides generally distinguished, as has been said already (page 217), by the colour of the scapulars and middle of the back, which in the American bird are of an almost uniform pitch-black, as dark as or darker than the flight-feathers, and in freshly-moulted examples present a very pleasing contrast on the one side to the white wing-bars and on the other to the red mantle and rump.

The whole length of the male is five inches and three-quarters; the wing from the carpal joint three inches and a half. The longest primaries are generally narrower and more pointed in the present bird than in its Eastern representative, and the height of the bill at the base rarely if ever exceeds ·3 in. The tapering form of this feature has been before mentioned.

That the present is the form entitled to the name of "White-winged Crossbill" none can doubt, and the word "American" added thereto in the last Edition of this work is an encumbrance which requires a corresponding geographical epithet in the case of the preceding bird. That of "European" then applied is misleading, for the head-quarters of *Loxia bifasciata* are rather in Asia than Europe. When the difference between the two forms was recognized by British ornithologists, Newman proposed (Zool. p. 2300) to call that of the Old World the "Two-barred Crossbill," and this earliest distinctive name, though possibly not the happiest that might have been chosen, has been accordingly here retained for it, while the ancient style of the American form is left unchanged.*

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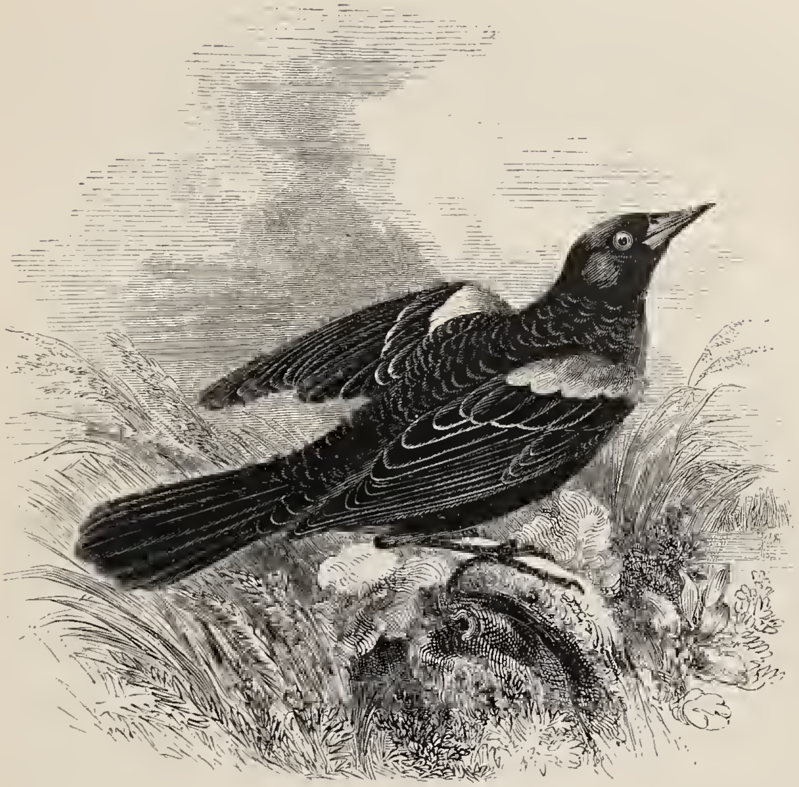
* Certain writers, it may be remarked, for some recondite reason have removed the Crossbills from the genus *Loxia*, but to the Editor it seems unquestionable that *L. curvirostra* must be considered the type of that genus as founded by Linnæus, who, as was his wont, combined in his appellation the names by which it had been before known to naturalists, while the derivation of the word *Loxia* (from the Greek λοξὸς, wry) shows that it is unsuitable to any of the other groups to which it has been applied. Some writers have also separated the Crossbills from the *Fringillidæ*, and have given them the rank of a family under the name of *Loxiidæ*—a very needless division since they are most intimately related to many of the unquestionable Finches.



AGELÆUS PHŒNICEUS (Linnæus [*]).

THE RED-WINGED STARLING.

Agelaius phœniceus.

AGELÆUS, *Vieillot* [†].—Bill as long as the head, hard, stout, straight and cuneated; the mandibles nearly equal, their edges inflected. Nostrils basal, oval, overhung by a rudimentary operculum. Gape angular. Wings moderate, with only nine primaries, that which is ordinarily the first being absent, and of those present the outermost is shorter than the next two. Tail rather long, rounded. Tarsi scutellated in front, covered behind by a single plate; claws moderate.

A SPECIMEN of this common American bird, shot near London, was figured in 1738 by Albin, who says that he found in its gizzard, grubs, beetles and small maggots, adding "I believe it was a Cage-Bird, which had got loose." The plate shews it to have been an adult male.

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[*] *Oriolus phoeniceus*, Linnæus, Syst. Nat. Ed. 12, i. p. 161 (1766).

[†] *Agelaius* (by mistake), Vieillot, Analyse &c. p. 33 (1816).

This species is indeed so common a cage-bird, so patient of captivity and so certain to find, at least for a time, its living in this country (in the case of its escape from confinement) that, setting aside the possibility (which is of course not to be denied) of its crossing the Atlantic without human aid, the wonder perhaps is that a far longer list of its occurrences at large in Britain has not to be noticed. More than a century, however, passed away between the time when Albin painted its portrait and that of its being next observed in this island. On June 2d, 1843, an example was shot near Barton Broad in Norfolk, when another bird of the species was said to have been in its company. While quite fresh this specimen, which was a male in good condition, its stomach filled with the remains of beetles, came into the possession of Mr. Gurney, who kindly allowed the preceding figure to be taken from it. In the autumn of 1844 another example, as originally recorded in the 'Supplement' to the First Edition of this 'History', was shot among reeds in a brick-field at Shepherd's Bush near London; and the specimen, which is now in Mr. Bond's collection, was also lent for the use of this work. It was also a male, apparently older than the Norfolk bird. Mr. Jeffery has recorded (Zool. p. 8951) the shooting of a male at Sidlesham in Sussex, December 25th, 1863. Mr. Harting mentions having been informed by Mr. J. H. Gurney of another male, said to have been killed near Romney in Kent, which was seen by him in the hands of a birdstuffer at Rye, in June 1864 or 1865, and in May of the latter year, according to Mr. W. Jesse (Zool. p. 9782), a male was seen at Liphook in Hampshire, for about a fortnight. A male, now in Mr. Monk's collection, is said to have been caught near Brighton, March 21st, 1866 (Zool. s.s. p. 229).* A young male, writes Mr. Edward (Zool.

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* Mr. Harting (Handbook, p. 117) speaks of "two others procured at the same time"; but these specimens, Mr. Rowley informs the Editor, were skins sent to the same birdstuffer to be mounted.

s.s. p. 310), was shot near Banff in June 1866, and was subsequently exhibited to the Glasgow Natural History Society. Mr. Gray states, on the information of Mr. R. Scot Skirving, that a male example was seen in East Lothian a few years before he wrote. Lastly Mr. S. L. Mosley has recorded (Zool. 1877, p. 257) a male found dead under the telegraph-wires at Adwick-le-Street, in Yorkshire, in March 1877, which was soon after exhibited to the Huddersfield Scientific Club.*

Wilson, Audubon and Nuttall, as well as other more recent American ornithologists, have given interesting accounts of this bird, which abounds in suitable places from the Atlantic to the Pacific, at least so far northward as Great Slave Lake and southward as Guatemala, where Mr. Salvin has found it to be a resident. Towards the north, however, it is migratory, arriving in spring and departing in autumn. In most parts of the country it has gained a very bad reputation from its plundering propensities. It not only plucks up the germinating grain; but ravages also the ripening crops—maize, rice or buckwheat, especially while the seeds are yet soft—its numbers making its depredations very formidable. Yet for a considerable portion of the year the "Corn-thief," as it is very commonly called,† is not only harmless, but positively beneficial to the husbandman, and more than compensates him for the damage done at other times. In New England, from March to July, its food consists almost wholly of insects, and these of the most noxious kind—the grubs and caterpillars that are the greatest enemies to vegetation. In August it collects in small bands, which as the season advances join company and move southward. In winter the associated flocks may be numbered, says Audubon, by millions, and chiefly frequent marshy grounds whereon they feed. Wilson compared the noise of their wings as they rose to thunder. In the air they wheel about, and appear at times like a black cloud driven by the wind and varying in shape every moment. Presently they will alight in some detached grove, and at once begin a grand vocal performance which, the same observer says, can be heard more than two miles off. Towards evening they settle with much noise in compact bodies on the reeds and rushes close above the water, and, when disturbed, repeat their aerial evolutions ; but, finally pitching on the spot first chosen, remain there for the night.* Early in March these large assemblies break up. A part separate in pairs and remain among the southern swamps, but the greater number in small flocks, the males leading the way, return northward and seek their breeding-haunts, which are on the borders of streams or marshy spots. The nest is usually placed in a low bush, among thick reeds or even on the ground, but occasionally a loftier site is chosen. Its outer framework is usually of rushes and flags, within which are arranged sedge and grass. The eggs vary much, and are of a greenish-white or pale pinkish-brown, blotched and lined with dark liver-brown—some of the markings, which often form a cap or zone, being sharply defined, while others are surrounded by a penumbra—besides a few blotches of light ash-colour. They measure from 1·15 to ·92 by from ·76 to ·65 in. In New England these birds rear but one brood in the season, but further to the southward they are said to have three or more.

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* It is to be remarked that in every recorded case of the species being observed in Britain the specimen has been a cock, and this fact favours the view that all have been imported examples that have escaped; since the hen, owing to her dingy plumage, is seldom kept in confinement. It may be objected on the other hand that the cock would obviously attract attention sooner than the hen, but her dull appearance would hardly save her from the notice of the numerous keen observers always looking out for curious birds, as testified by the fact that quite as many strangers of obscure as of bright plumage have from time to time been detected by our field-naturalists.

† Another name for it is Swamp- or Marsh-Blackbird. In Canada it is very generally known as the "Field-officer"—the scarlet patch on the wings of the cock being thought to resemble the crimson sash distinguishing the higher ranks of the army. In like manner it was named *Commendador* or *Commandeur* by the early Spanish and French colonists in America—a red badge being worn, say old authors, by the commanders of a certain Spanish order of knighthood.

Some of the habits of this species will thus be seen greatly to resemble those of our Starling, but the two birds belong to wholly different families, which have little structural affinity, and the Editor cannot but regret that the Author having included the present member of the purely American family *Icteridæ* in this work its position must still be retained here. It has been most properly refused admission to the European list by all foreign ornithologists.*

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* Dr. Coues states that the sexes of the western form (*Agelæus tricolor*) keep apart in their winter-flocks. Whether this is also the case with the eastern bird does not appear.

The male, killed in Norfolk, had the bill black: the irides dark brown: the head, neck, scapulars and back, black; the feathers below the neck edged with reddish-brown; the lesser wing-coverts red, the middle orange-yellow, the greater black, edged with brownish-buff; wings and tail black; the lower part of the body black: legs, toes and claws, black.

The specimen killed at Shepherd's Bush, being older, had lost all the buff margins of the feathers of the back, scapulars and greater wing-coverts; the whole plumage, except the red and yellow patch on the wing, being of an uniform glossy black.

The length of the male is about nine inches; the wing from the carpal joint nearly five inches.

The female is much smaller, dark brown above, the feathers edged with light brown; a light stripe along the middle of the head; the lesser wing-coverts tinged with red; wings and tail blackish-brown, the feathers margined with brownish-red; a yellowish band over the eye; beneath dull white streaked with dark brown, except on the throat, which together with the lores and sides of the neck, is tinged with carmine. The young resemble the female, but have no red tinge, and the throat is pale yellowish-brown.

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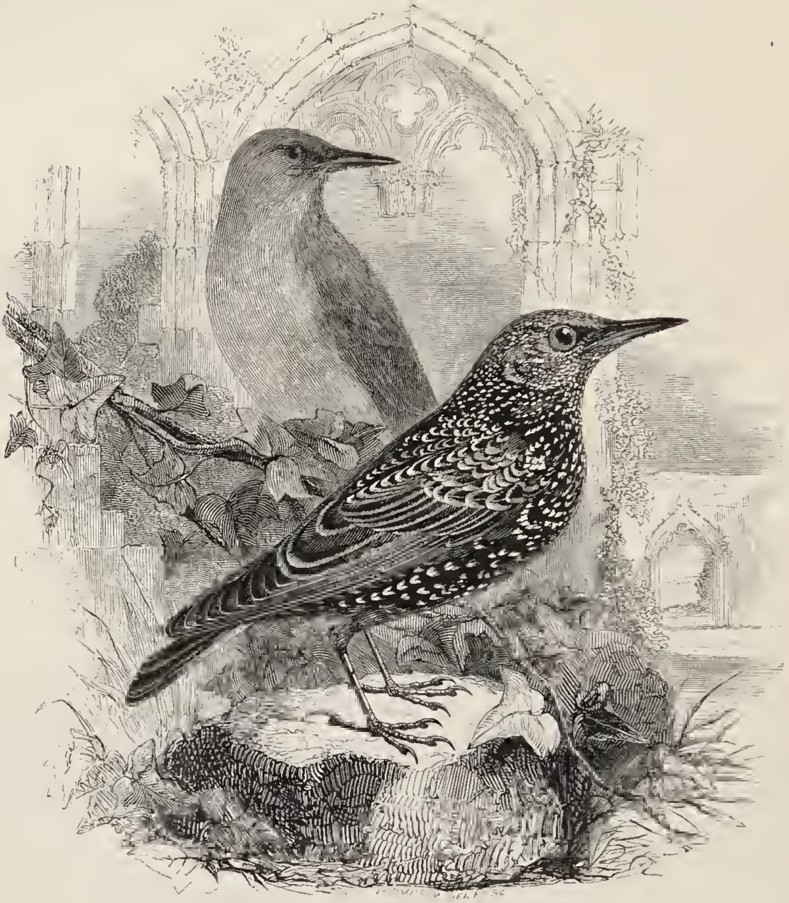
* Three examples of *Sturnella ludoviciana*, the "Meadow-Lark" of North America, which belongs also to the *Icteridæ*, are said to have been observed in England—one seen by Capt. Jary in Norfolk in October, 1854; a second shot at Thrandeston in Suffolk in March, 1860, and now in Mr. H. T. Frere's possession—both recorded by Mr. Sclater (Ibis, 1861, p. 177); and a third, killed near Cheltenham many years ago, as mentioned by Mr. Harting (Handbook, p. 118) on Mr. J. W. Lloyd's authority.

PASSERES. *STURNIDÆ.*



STURNUS VULGARIS (Linnæus [*]).

THE STARLING.

Sturnus vulgaris.

STURNUS, *Linnæus* [†].—Bill as long as the head, almost straight, blunt at the tip, depressed so as to be wider than high; edges of the upper mandible extending over those of the lower and both quite smooth. Nostrils basal, supernal and partly overlaid by an operculum. Gape angular and free from bristles. Feathers of the head and anterior part of the body pointed and elongated. Wings long, pointed, with ten primaries; the first very short, the second or third the longest. Tail short, rectrices diverging at the tip. Tarsus scutellate in front, covered at the side by an undivided plate, forming a sharp ridge behind. Claws short and moderately curved.

[*] Syst. Nat. Ed. 12, i. p. 290 (1766).

[†] *Loc. cit.*

The Starling, from its lustrous plumage, its sprightly actions and, during some part of the year, its familiar disposition, is with most people a favourite bird; while its abundance and nowadays its very general distribution throughout the British Islands make it also one of our best known species. Its clear, lively notes, forming a varied and agreeable song also recommend it, and even those who are unaffected by such considerations as these may know that in this bird, if they have studied its habits, they have a benefactor of almost priceless value, since the pilfering of fruit and damage to seeds, presently to be noticed, of which it is at times guilty, though bearing hard upon some persons, go for nothing compared with the general advantages to the community conferred by its almost ceaseless destruction of injurious insects. In plumage it stands nearly alone among our common small birds, for its feathers, bespangled with amber and reflecting a brilliant metallic sheen, bespeak its alliance with some of the brightest denizens of the tropics. In activity, though its gait on the ground has been not inaptly termed shambling, it is firm and rapid, and the Starling runs over the turf of our lawns with an ease only surpassed, among our Land-birds, by a Wagtail, while it will cling like a Woodpecker to the rough bark of a tree in search of the larvæ therein harboured. The familiarity with which it occupies our dwellings manifests a trustfulness, sometimes unfortunately misplaced, equal to that of the Swallow or Martin, and a sociability that is free from the intrusive pertness of the House-Sparrow. Its song is as imitative as that of the vaunted Mocking-bird, and in nothing perhaps is it more grateful than in the reminiscences it brings to our homes of its wilder associates far afield; for Starlings consort with many kinds of birds, learn their notes and frequently mingle them in their own strain.*

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* Thus the well-known wail of the Lapwing and the piping note of the Ringed Plover may be heard in places wholly unsuited to the habits of those birds. Messrs. Matthews mention Starlings imitating the cry of the Kestrel, Wryneck, Partridge, Moorhen and Coot among other birds (Zool. p. 2430). Saxby says that in Shetland the notes of the Oyster-catcher, Golden Plover, Redshank, Curlew,

Some conception of the Starling's utility as a destroyer of insects may be formed by any one who will avail himself of the opportunities, which its tameness so commonly gives, to watch it while feeding. Hardly a fly or a beetle escapes its quick sight or, if at all within reach, its agile motions as it runs over the grass. More than this, it industriously probes beneath the surface for the grubs which lurk at the roots, and, thrusting aside obstructions by opening its bill, skilfully extracts these still greater enemies to some kinds of vegetation than the perfect insect; and Mr. Cordeaux has noticed its enormous destruction of the *Aphides* that feed on tares and pease (Zool. p. 9280 and s.s. p. 944). It may be often seen perched on the back of sheep and oxen as they graze, and their owners speak highly of its services in removing the ticks or other parasites with which these animals may be infested. But it is not only on or near the ground that the Starling follows its useful labour: in hot weather it may be seen soaring aloft engaged in diminishing the swarms of high-flying insects which at times mount above the tallest trees.* Its appetite is insatiable,† and when insects are

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Whimbrel and Herring-Gull are perfectly mimicked. Mr. Hooper, of Upton near Didcot, informs the Editor that Starlings in that neighbourhood will render exactly the characteristic cry of the Quail and the Corn-Crake. The common sounds of the poultry-yard are often copied with more or less accuracy, and a Duck may be heard to quack, a Hen to cackle and a Cock to crow from the topmost bough of a tall tree. It seems quite possible that in some of the stories which have been told of Blackbirds' crowing or cackling (vol. i. page 281) the imitator may have been a Starling. In confinement it will readily learn to utter sounds resembling the human voice. Pliny mentions one which spoke two languages, Greek and Latin—a feat performed by another, some 1500 years later, in regard to German and Polish (Journ. für Orn. 1870, p. 65). Naumann tells us of one which had been taught to repeat the Lord's Prayer word for word, and the bird celebrated by Sterne will never be forgotten so long as English literature lasts.

* The very destructive *Phyllopertha horticola* is thus taken in great numbers, though far more are consumed in its larval state, while buried in the ground.

† Thompson remarks that in quantity as well as variety of food consumed, Starlings exceed all birds that have come under his notice, and gives some details as to the contents of the stomach of several examples examined by him. M. Florent Prevost's observations on the Starling's diet throughout the year in France will be found in the 'Zoologist' (p. 8762), and Newman in the same magazine (s.s. p. 2632, note) has named the insects which are chiefly destroyed by this bird and the Rook.

wanting the smaller mollusks are as busily sought, while worms are at all times readily taken. In winter a certain proportion of seeds enters into its diet, and among them occasionally a few grains of corn may be found, but these seem to be its last resource. Berries however of various kinds have their attractions,* and it cannot be denied that of late years charges have been often brought against the Starling, and apparently not without cause, of doing considerable damage in cherry-orchards—especially in Kent. The actual extent of its depredations has perhaps been exaggerated, for such is the wont of horticulturists, who are always prone to condemn in a sweeping sentence a whole race of beings when they have been losers by any part of it. The naturalist will wait to enquire whether the injuries complained of may not be inflicted by some individuals rather than by the species generally, whether they may not be due, in part at least, to some peculiarity of the season which has for a time changed the birds' habits, or whether the damage be really one of the results of the great increase of the species which has been continually going on for some years past in this island.

This increase is indeed a very remarkable fact, attested on so many sides that it must be accepted, though there are some few places in which the contrary has to a slight degree been observed. The growing abundance of the Starling with us has been ascribed to the destruction of birds-of-prey, but perhaps too hastily, since though Hawks of every kind have become of late years scarce in this country, there is no Hawk known specially to prey upon Starlings. Nor can we reasonably suppose that the increase of the latter has been much induced by those who, following the example of Waterton,† have provided shelter for it, since unless a sufficiency of food is forthcoming for the many additional mouths accommodation for additional bodies would avail little. Moreover, as is the case throughout Scotland (to be more particularly dwelt on presently), Starlings have become more and more abundant in places whither they have not been invited. The true cause of their increase is more likely to lie in a growing abundance of food, but we must confess our ignorance as to how that growing abundance has been produced.

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* Bolton figured this bird feeding on crow-berries (*Empetrum nigrum*) of which he says he noticed near Halifax that it seemed to be particularly fond. Elder-berries are also eaten by it.

† No naturalist will of course have the least wish to undervalue the efforts made by Waterton for domiciling the Starling. To him the praise is due that he was one of the first to appreciate its benefits, and to make the attempt which in his case succeeded so perfectly. In his old gateway he many years ago made two dozen suitable holes which were forthwith and for the rest of his life tenanted by as many pairs of this bird. Bewick often told Mr. Hancock how delighted he should be if a Starling could be induced to build its nest in his house, but from

The Starling builds its nest in the holes of trees, cliffs or banks, all of which must be regarded as its natural habitations but will, though very rarely, make one after the fashion of most other birds.* It readily avails itself of any convenient situation which may be afforded it by man or other animals, and has been often found the tenant of a rabbit-burrow when opening on the face of a declivity, while its occupation of man's edifices, from the towers of the proudest cathedral to the wall of a lowly hut, composed of boulders and turf—from the venerable ruins of an ancient castle to the pretentious villa of modern days, whose peeling stucco invites the Starling to penetrate its fissures—is known to all. It will dispute with a Woodpecker the hole which the latter has laboriously chiselled in a tree, and will almost always gain an easy victory, for on its carrying in some nest-furniture the Woodpecker at once yields possession. The Starling too

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the bird's scarcity in the north of England in those days, the wish was apparently never gratified. Where the species is at all numerous nothing is easier than to attract it, by setting up a nest-box for its accommodation.

* The Editor well remembers a Starling's nest (an old Sparrow's very likely forming its foundation) built of straw in a large yew, and open to the sky. This was at Elveden in 1842 or 1843, and, though at the time perfectly aware of its being a deviation from the bird's usual habit, he did not imagine that such an instance had not been recorded as known before, or that some five-and-thirty years after he should be unable to cite more than a few similar cases. Mr. G. B. Clarke mentions (Nat. 1851, p. 214) some platform-nests, composed of twigs and bents in fir-branches at Woburn, and Mr. J. P. Thomasson twenty years later (Zool. s.s. p. 2682) a nest built against the trunk of a small fir near Bolton-le-Moors. As an equally exceptional site for a nest may be mentioned that described by Mr. J. Sclater (Zool. s.s. p. 3647), where a small hole in the level surface of the ground was used and a brood hatched. Mr. J. W. Barlow (Zool. p. 1023) was told of a Starling which laid in the same nest with a Pie.

will share with the Sparrow* any convenient site that an ordinary dwelling-house affords, and will frequently occupy a niche in a Dove-cote—but very seldom to the detriment of the Pigeons, with which it generally lives in perfect harmony. To the majority of us it is most familiar as our fellow-lodger under the same roof, and it freely enters the precincts of our largest and smokiest cities—even London and Glasgow, at the breeding-season, when a disused chimney, a displaced slate or tile, a defective cornice or any of the numerous faults of a building, will give it the accommodation it needs. But it is seen to best advantage in the country, and nowhere better than around the gabled manor-house and battlemented church steeple, bosomed in stately elms, or the snug homestead and thatched cottage, surrounded by trim crofts and meadows—where each eave, coping, buttress and gurgoyle offers a nursing-chamber for the young, and every turret, weather-cock, pinnacle and finial a footing for the old. The ivy that clothes so many old walls and trees adds yet more to its convenience, and their summits resound, especially on sunny mornings and evenings, with the never-ending variations of its song—the chattering harshness of some of its notes making the long drawn out sweetness of others, to which they are linked, all the more acceptable to the ear. Very early in the year the Starling resorts to the breeding-place of its choice, at first for only a short time in each day, but as the season advances its visits are of longer duration, until the needs of getting food or building-material alone cause its absence. The nest, which is generally the joint work of both sexes, consists of a large mass of dry grass or straw, with a few roots and slender twigs, arranged without much art. A little moss, wool and occasionally feathers are also used. These are rudely disposed cup-fashion, and therein are laid the eggs, from four to seven in number, of a delicate pale blue, in some specimens slightly tinged with green, but generally varying only in shade, their thin and semitransparent shell giving them when fresh an opalescence of surpassing beauty, which vanishes so soon as the contents are emptied. They measure from 1·26 to 1·08 by from ·88 to ·81 in. Some Starlings begin to breed the first week in April, while others hardly set about their nests till late in May*—a fact which has led many people to suppose that the same pair has two or more broods in the year, for occasionally the same hole may be tenanted twice in the season—but such an occurrence seems to be very rare in this country.† The hen sits so closely that she may be often caught on the nest, and the cock assists her by bringing her food. The eggs are hatched in about sixteen‡ days, and both old birds assiduously nurse the young till they can fly. Loud are the cries of both parents and offspring at feeding-time. The former uttering, mostly when there is cause for alarm, a sharp and angry "spate", "spate", while the greeting of the latter sounds like "square", "square". By the end of a fortnight the nestlings are fully fledged, and are then led abroad to find their own living in the nearest pastures, wandering by degrees further and further away; but, for some weeks, the family continues in company, and all its members return at nightfall to roost as close to their home as circumstances permit.

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* It must be admitted that Mr. Gray's evidence tells ill for the Starling. On one occasion he says he saw it drag five newly-hatched Sparrows in succession from their hole, and leisurely swallow them on the roof of the house. It is to be hoped that this murderous disposition is very exceptional : it is certainly uncommon, and most people will agree in stating, as the result of close observation, that Sparrows shew no jealousy of Starlings being near them.

When the young towards midsummer have attained their full strength, the various families begin to take yet wider beats in search of food, and, falling in with others on the same quest, gather in small companies, to which accessions are constantly being made, until considerable bands are formed. These range over the whole country—at times affecting grassy downs or uplands, at times the fallows, or, again, the lower and moister meadows, according as insects are found to be procurable—occasionally even crossing the sea. In some localities the birds' movements are conspicuously constant, in others they are marked by the greatest irregularity, and the supply of food alone can be assigned as the cause of this diversity, which thus depends largely on the variability of the season. On the produce of any district being exhausted, the bands separate and rove in search of new feeding-grounds, which being found, they collect as before, or possibly even in greater numbers. Thus it may happen that certain parts of the country may on a sudden be almost wholly deserted, as the Starlings collect in other parts or even leave the island. This desultory kind of life continues to the end of summer, and brings them into contact with several very different kinds of birds having the same object in view—especially Rooks, Daws and Lapwings, whom they accompany without any other bond of union than self-interest,* and from whom during some hours of the day they generally, and towards sunset they always, secede—resorting to certain well-known places, perhaps at the distance of many miles, to roost. As evening approaches they may be seen high in air, flying steadily towards these points, and night after night, and year after year at the same season, the same station is thus occupied, the different bands commonly collecting, as the afternoon advances, on the tops of tall trees, where they sit and chatter tumultuously for a longer or shorter time, preparatory to their final departure for their night-quarters. These Starling-roosts, as varied in character as in magnitude, have excited the wonder of many observers, from Sir Thomas Browne's days to our own, and exist in many places throughout the kingdom. Reed-beds are especially a favourite resort, and where reeds form a valuable property and are regularly harvested, the serious nature of the damage often done by Starlings is not for a moment to be disputed, for the stems are borne down, broken and crushed by the mere weight of the birds that alight upon them, as though they had been subjected to some mechanical process.* Fir-plantations are also a favourite haunt, as well as shrubberies of holly, ilex and the like, and this work is indebted to the late Dean Goodenough for the following account† of perhaps the largest Starling-roost in England, as it existed some years ago, on the property of the late Mr. Miles at King's Weston near Bristol:—"This locality is an evergreen plantation of arbutus, laurustinus, &c., covering some acres, to which these birds repair in an evening—I was going to say, and I believe I might with truth say—by millions, from the low grounds about the Severn, where their noise and stench are something altogether unusual. By packing in such myriads upon the evergreens, they have stripped them of their leaves, except just at the tops, and have driven the Pheasants, for whom the plantation was intended, quite away from the ground. In the day-time, when the birds are not there, the stench is still excessive. Mr. Miles was about to cut the whole plantation down to get rid of them, two years ago, but I begged him not to do so on account of the curiosity of the scene, and he has since been well pleased that he abstained."

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* Instances are recorded of the Starling breeding in autumn (Zool. p. 6328 and s.s. pp. 3313, 3368): in spring the hen's habit of occasionally dropping an egg on the grass must be known to many people.

† Saxby speaks of it, however, as being the rule in Shetland.

‡ On this point observers differ. Naumann says fourteen days, Herr H. C. Müller (in the Færoes) eighteen.

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* Some observers have thought that Starlings act as pilots to their larger companions, others that they are only followers ; but the fact seems to be as stated above—the association being merely fortuitous.

Another similar and perhaps larger congregation has been described by Mr. Ball, who, in 1845, stated that from 150,000 to 200,000 Starlings were computed to roost, every night between the end of October and the end of March, in some thorn-trees in the Zoological Garden at Dublin, and that this enormous estimate was the result of many observations. When the birds were first noticed their number was put at from 15,000 to 20,000, but within three years it seemed to have increased tenfold.* Accounts of two other very large Irish Starling-roosts, at Lough Fern in Donegal, and at Doohyle Lough, co. Limerick, were communicated to the Dublin Natural-History Society (Jan. 8th, and Feb. 5th, 1858) by Mr. Montgomery and Mr. G. H. Kinahan.

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* The calamity is aggravated by the fact that a reed, which can sustain the weight of perhaps two or three Starlings, breaks when as many more attempt to perch upon it. Then all these have to try a fresh stem, which in its turn gives way, and so on until the birds have injured far more reeds than would suffice to seat the whole flock comfortably but for their disorderly crowding. But the evil can be and generally is averted by various expedients such as the firing of guns to scare away the collecting myriads, while the discharge of rockets, after the birds have found a resting-place, is not without its use as a means of driving them from their haunt. The uproar caused by a night-alarm of this kind is indescribable.

† This account was published in the First Edition of this work in 1839. It appears that the present proprietor not appreciating the almost unique privilege (so far as England is concerned) keeps the evergreens cut low, and so deprives the Starlings of their roosting-place.

Though the ordinary flight of Starlings is very swift and well-sustained,† it would not need special remark, were it not for the wonderful performances of the multitudes, whose congregations have just been noticed, prior to their going to roost for the night, and occasionally during the day by smaller bodies, especially when disturbed by a Hawk, but sometimes, particularly in early spring, apparently for mere joy. Possessing very considerable powers of wing these are turned to account in an extraordinary manner by the birds composing the flock. They wheel, close, open out, rise and descend, as if each were obeying a commander, and all this is done with the most marvellous precision while the flock is proceeding at a rapid pace high in air. At times it may extend in a long and nearly straight thread; suddenly an undulation is visible along the line, and, in a moment, it takes the form of a thin and smoke-like cloud: another moment, and it is a dense and almost perfect globe‡; then, possibly having preserved this appearance for a perceptibly longer time, it becomes pear-shaped and, in another instant, assumes a spiral figure; an instant after, it has spread out like a sheet, and its members are seen streaming softly along the ground, perhaps to alight or perhaps once more to mount aloft and circle as before. These performances are varied also by the flock becoming momentarily invisible or partly so, through the birds as they wheel turning their wings edgeways to the spectator's eye, and then, on a calm day, the noise caused by the sudden change of direction will reach his ear from the distance like the rumbling sound of a heavy carriage on a hard road. Few things of the kind are more entertaining than to watch a flock of Starlings as they rise with the Rooks, Daws or Lapwings in whose company they may be. While the Lapwings slowly marshal themselves into their accustomed formation, or the Rooks and Daws, with not much more speed, betake themselves skyward after some uncertain beating of the air, the organization of the Starlings seems to be perfect from the moment they leave the ground, and they shoot ahead of and across the flight of the larger birds; or, wheeling round, pass through the comparatively unformed ranks without the slightest disturbance of their own array—now on this side, now on that—and, returning, should the alarm prove needless, perhaps to the spot whence they had risen, resume feeding as busily as ever, long before their incongruous associates have been able to judge of the probable danger and to act in accordance with their sagacity.

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* Mr. Ball's description, originally published in 'Saunders' Newsletter' (March 25th, 1845), has been reprinted in full by Thompson. Mr. More (1877) informs the Editor that for the last four years the Starlings have not resorted to this roost, and that for some time before they used to come only at uncertain intervals, absenting themselves for perhaps two or three years and then returning.

† Gilbert White says "Starlings as it were swim along."

‡ Sturnorum generi proprium catervatim volare, et quodam pilæ orbe circumagi, omnibus in medium agmen tendentibus.—*C. Plinii Nat. Hist.* x. 24.

In winter comparatively few Starlings are left in most parts of the interior of England. Even about midsummer, as has already been stated, some begin to cross the sea, and it would seem to be the ordinary habit of this species to move westward as autumn approaches. The regularity of its appearance at that season in Wales, Cornwall and Ireland was observed long ago, before it had become, as it now is, more plentiful as a resident in those parts; but even at the present day the influx of large flocks from the eastward is very evident. In like manner, as the experience of our lighthouse-keepers tells us,* we receive great additions from the Continent in the fall of the year. Most of the strangers, no doubt, pass on, but many tarry for a time and join the majority of our home-bred birds in their sea-side resorts or along the banks of tidal rivers. In such places marine animals, and especially crustaceans, furnish much of their food, and to obtain it they examine the heaps of washed-up seaweed or turn over the stones with their bill. The minority which stay about their own home are, during hard frost, driven to great extremity, and, pinched with hunger, depend chiefly on what may be got in sheep-folds and cattle-lairs; but, when the weather permits, they assiduously follow the plough and in the pastures, beside the grubs of *Tipulæ* so constantly present, there is often a good store of food accessible, except in time of snow, under dried cowdung. With the first indications of returning spring our Starlings hasten to their old breeding-quarters and await the arrival of that glad season.*

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* Excepting perhaps Skylarks, no birds are more frequently attracted to the lanterns than Starlings.

The Starling is now found in almost every part of the United Kingdom. On the Scottish mainland it used to be comparatively scarce, and it was rare in the southern and midland counties even when Macgillivray wrote. Mr. Gray says that its appearance in the cultivated districts was an event so recent as to have excited universal attention. But at present there are few if any counties in which it does not regularly breed more or less plentifully, and it seems to have always frequented the rocky parts of the coast, and to have been especially abundant in the Hebrides, Orkney and Shetland, in all of which it occupies the same haunts as the Rock-Dove and the Cormorant. Of Wales (though information is far less precise) and Cornwall, much the same may be averred (Zool. p. 3045 and s.s. pp. 137, 455); but it is still a rare bird in summer. With regard to Ireland, according to Thompson, it is common and breeds in many parts of the island, but investigation of the evidence offered by him (in great detail) and other Irish naturalists, especially Mr. Blake Knox, shews that its breeding-places there are still few and far between, that from most districts it disappears altogether in spring, and that it is only abundant in winter—regularly arriving in the north, as first observed by Templeton, in autumn, though it has been known to immigrate at midsummer (Zool. p. 9211).

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* In thus attempting to trace the Starling's life the Editor, besides his own observation, has been assisted by information from sources far too numerous to mention. None of these, however, excels the admirable account given in Stanley's 'Familiar History of Birds', which proves its author to have been unsurpassed as an accurate observer and faithful narrator when opportunity allowed him. But it must be remembered that, though one of the best chapters of ornithological biography ever written, it had professedly but a local scope, its scene being laid at Alderley in Cheshire. In the foregoing paragraphs there has been no intention of copying that inimitable account, but it cannot have failed to affect the Editor in writing them, as from boyhood he has known it almost by heart, and indeed it is one that no lover of birds who has read it can forget.

The Starling is stated by Prof. Reinhardt to have once strayed to Greenland. In the Færoes it is resident and the native race of those islands can generally be distinguished from that of our own. In Norway it occurs, but not very plentifully, so high as the Lofodens, and it has been repeatedly observed at Tromsö in spring and autumn, while it has twice been obtained in East Finmark. In Sweden it is unknown to the north of about lat. 64° N. It appears in the western and southern provinces of Finland, throughout Russia, to the southward of lat. 60° N. and thence across Siberia, at a somewhat lower elevation, to Lake Baikal, but its limits are not defined with any certainty by Dr. Radakoff*. The asserted extension of its range to China and Japan is very doubtful, but it is found in Northern India, and even near Calcutta. Some ornithologists have considered the Indian bird to form a distinct species, but most authorities deny its validity. In Cashmere and Persia, however, there is a Starling, *Sturnus humii*, which seems to differ constantly from the common species, and so likewise in Armenia, where is found a form distinguished as *S. purpurascens;* but our *S. vulgaris* probably occurs as well in all these countries—certainly in Persia. It also visits Asia Minor†, Palestine, Arabia and Egypt, in winter. At the same season it appears regularly in Mauritania, the Canaries and Madeira, though it does not breed there as it does in the Azores, where it is common and resident. To Portugal, Spain, Southern France, Italy, Turkey and Greece, as well as the Mediterranean islands, it is a more or less abundant winter-visitant, but in most if not all of these countries its place as a resident is taken by the nearly allied species *S. unicolor*. Throughout the rest of Europe it is generally common, though with some scattered exceptions, as for instance, according to Dr. Borggreve, part of Upper Silesia. In some places it has been induced to take up its quarters by accommodating it with nest-boxes, and Mr. Dresser says that in Russia he found many villages so supplied; the people knowing the great services it renders to their crops, and especially in ridding the oak-forests of the injurious *Tortrix viridana*. Holland seems by all accounts to be the country in which the Starling is most numerous.*

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* Hand-Atlas der geographischen Ausbreitung der in europäischen Russland nistenden Vögel. Fol. Moskau: 1876.

† The Marchese Oratio Antinori estimated a flock he saw in January, 1858, crossing the Gulf of Smyrna to contain 2,500,000 birds (Journ. für Orn. 1858, p. 489).

The adult male in summer has the bill yellow, light blue at the base: the irides brown†: almost the whole plumage black, but brilliantly shot with purple, green and, in some parts, with steel-blue, according to the reflection of the light; the feathers of the hind head, nape and upper parts generally, tipped with white or pale buff, in the form of triangular spots; wing- and tail-quills greyish-black, partially shot with like brilliant hues on the outer web, and edged with light reddish-brown: legs, toes and claws, dark reddish-brown.

The whole length is eight inches and a half; the wing from the carpal joint, five inches and one-eighth: the first primary about half an inch in length.

After the autumnal moult the feathers of the whole of the head, and of the lower parts generally, are broadly tipped with white or pale buff, in the form of arrow-heads, the triangular spots on the upper parts being larger. These are carried through the winter, but gradually diminish in size as spring comes on, so that those on the top of the head, and lower parts generally, disappear almost entirely before the following summer. In autumn and winter also the bill is dusky horn-colour, which brightens into yellow on the approach of spring. Whether any other change takes place as the bird grows older may well be doubted.

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* The Starling has been taken to New Zealand, where it will doubtless aid in the extinction of the original avifauna. The bitter taste of its flesh has long been notorious, but this does not hinder the bird from being served at foreign tables as a "*Grive*", in anticipation of the season when Thrushes are abundant.

† Macgillivray says he has seen the iris yellowish, and it is perhaps worthy of remark that several exotic species of *Sturnidæ* have white or bright yellow eyes.

The female is very similar to the male, but her plumage is rather less brilliant, and the terminal spots are generally larger and, especially in spring and summer, more numerous —not being worn off to the same extent: the bill also does not assume the same bright yellow.

The young of the year, before the first moult, is of an uniform greyish-brown above; the wing- and tail-quills edged with light rufous-brown; the throat dull white, and the breast and belly clouded with white: the bill dusky horn-colour, with the gape yellow: legs and toes much as in the adult but more dusky. In this stage it is the "Solitary Thrush" of Montagu*, Bewick and Knapp. As the nestling plumage is lost that of the adult appears in patches, presenting a curious mixture.

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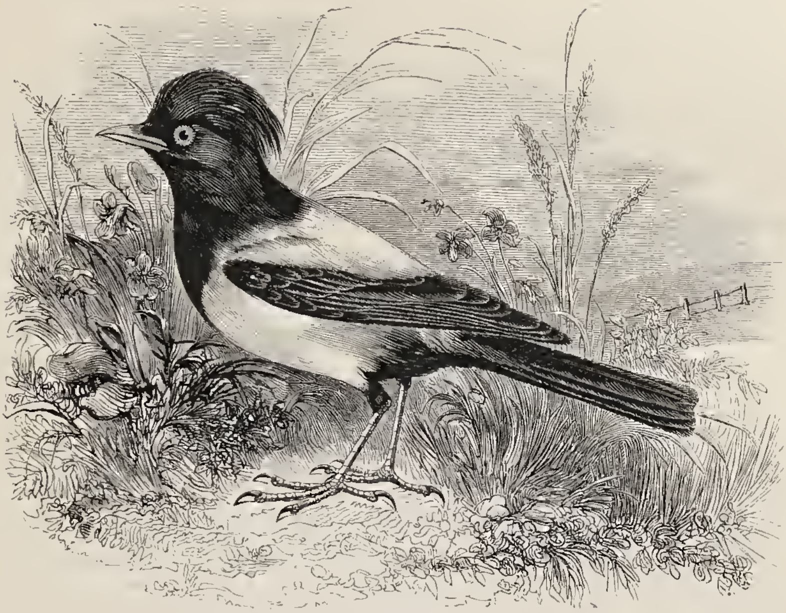
* Montagu's specimen is in the British Museum, and leaves no doubt on the matter. The real "Solitary Thrush", *Monticola cyanus*, is a very different bird (see vol. i. page 295).



Pastor roseus (Linnæus*).

THE ROSE-COLOURED STARLING.

Pastor roseus.

Pastor, *Temminck*†.—Bill moderate, convex above, straight beneath, compressed, the upper mandible notched and slightly decurved. Nostrils basal, lateral, oval, partly closed by a membrane covered with small feathers. Gape angular, and free from bristles. Feathers on the crown pointed and elongated, forming a crest. Wings long, the first primary very short, the second and the third nearly equal and the longest. Tail moderate, rectrices straight. Tarsus scutellate in front, covered at the sides by an indistinctly divided plate, forming a sharp ridge behind. Claws considerably curved.

The Rose-coloured Starling was first noticed as British by Edwards, who, in 1742, took his representation from a specimen killed at Norwood, and preserved at a coffee-house in Chelsea, where, he says, he "had liberty to draw it." Soon after he mentioned another which was shot in June 1747 by Mr. Roger North of Rougham in Norfolk. Latham in 1783 announced that a third example, shot at

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* *Turdus roseus*, Linnæus, Syst. Nat. Ed. 12, i. p. 294 (1766).

† Manuel d'Ornithologie, p. 82 (1815).

Grantham, was in Banks's possession, and that he was informed of one or more being shot almost every season near Ormskirk. In 1796, Shaw figured the species, stating that an example had been shot the year before in Oxfordshire.

The increased attention paid to ornithology during the present century shews that this beautiful creature has occurred more or less often in nearly three-fourths of the English counties*, and that its appearance, though to some extent irregular in point of season and place, may probably be an annual event. The majority of instances, as might be expected, are recorded from the eastern side of the kingdom, but the bird has not unfrequently been obtained in the extreme west—near the Land's End and in the Scilly Isles, while it has been also met with both in South and North Wales. According to Thompson it has visited all quarters of Ireland, including the range of the most western counties, the latter assertion being supported by details of its capture on the Isles of Arran in Galway Bay, and, three or four times, in Kerry. In Scotland, says Mr. Gray, it has occurred in almost every county from Wigtownshire to Shetland, but he has not heard of its appearance in any of the Outer Hebrides. Its visits to the British Islands usually take place between the middle of June and the end of August, but it has several times been noticed so early as May—once even (Nat. 1853, p. 156) on the 3d of that month †, and so late as October (Zool. p. 5320), while an example is said (Zool. p. 5203) to have lingered to December 20th. Eminently gregarious as this bird is known to be where it is abundant, it has been seldom seen in this country accompanied by any of its own species, and when it visits us it has to forego its social habits or to indulge them by joining a flock of common Starlings. Specimens taken here are quite as often in full plumage as not, and considering the early time at which some of them so frequently arrive it may be concluded that they have strayed from their comrades while seeking a breeding-place and, overshooting their mark, have continued that north-westerly course which seems natural to them in the spring of the year *. Many of the examples obtained in the British Islands have been observed feeding on cherries or other fruits, but as with the rest of its family insects, and especially locusts and grasshoppers, form its chief sustenance. In a general way, and with certain important peculiarities to be presently noticed, it greatly resembles our Starling in habits, but Saxby remarks that the actions of a young bird, which he watched for some three hours among a flock of Starlings, differed slightly from those of its associates. It did not instinctively follow all their motions in flight—as indeed may have been natural in a stranger—and seemed to procure its food on the surface, in a careless way, without boring the ground for it as they did. It ran with greater speed, carrying its body more horizontally, and often stood on a stone or other elevation. Its note was a little like a Starling's but less harsh.

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* Those in which no record of its appearance has been found are Berks, Gloucester, Hereford, Warwick, Hunts, Northampton, Rutland, Leicester, Stafford, Cheshire and Westmoreland, but its recognition in these counties sooner or later is doubtless to be expected.

† There is a record (Zool. p. 2598), hardly to be deemed satisfactory, of its occurrence in Oxfordshire in February, 1838. If there be no error the example may have been one that had wintered in this part of the world.

Long known as this bird has been†, little until of late years was ascertained of its mode of propagation. It had been supposed to breed occasionally in Italy, Switzerland and Germany, but with respect to the first of these the evidence is admittedly imperfect, and in regard to the two last Dr. Stölker maintains (Bericht u.s.w. St. Gall. naturw. Gesellsch. 1874–75, pp. 283, 284) that such as he was able to cite is worthless. He however omits mention of three instances recorded by Lord Lilford (Zool. p. 2968), who was in 1850 shewn, by Dr. Linder of Geneva, eggs said to have

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* Mr. Gray, on the authority of Mr. John Wilson, says that in 1840 the bird attempted to breed near Methlick in Aberdeenshire, but stronger evidence is needed for the acceptance of the statement.

† It seems to have been first described and figured by Aldrovandi, who, although the birdcatchers of his country called it a Sea-Starling, thought it was rather a Thrush, and so other writers, chiefly relying on the shape of its bill, considered it to be. Scopoli appears to have been the first naturalist who referred it to the Starlings, and there can be no doubt he was right.

been taken from a nest near that town, and some credit must be given to this assertion, though the cases, as will appear, were certainly abnormal. In 1838 a valuable account of this bird's habits, as observed by Alexander von Nordmann in certain parts of the Russian dominions, was communicated to the Academy of St. Petersburg (Bull. Sc. v. pp. 1–18). He was persuaded that it must frequently, though not annually, breed in societies near Odessa, but at that time he had not known of a single nest, nor was it until six years later that he fell in with any of its communities, an interesting description of which he shortly after supplied to the same Academy (Bull. Phys.-Math. iv. pp. 98–102). For some few years past the Rose-coloured Starling had only visited the South of Russia in small numbers, but in April 1844 huge flocks made their appearance, covering the pastures by day and at even collecting with outcries to roost on the trees. Most of the birds were already paired, and by the end of the month or the beginning of May, they took possession of every wall or heap of stones that offered a chink for the nest, which was composed of sticks, straws, wool, pieces of bast and the like, assiduously gathered by both cock and hen and formed into a largish, round, bowl-shaped structure, neither firm nor very neat. Stone-quarries also were equally inhabited, and all this not only close to Odessa, but far and wide throughout the Government of Cherson so abundant were the birds that the boys collected their eggs by the capful. These were in number from six to nine, but generally six or seven in each nest, and it was thought that some birds had laid twice. So soon as the broods were flown they repaired to the nearest gardens, where they clustered on the trees by thousands, while their parents fed them with locusts brought from the neighbouring steppes, and these assemblages were scenes of the greatest noise and confusion imaginable. As the old birds arrived with their bill distended with food and sought their own offspring, the young indiscriminately snatched it from them. Of their numbers some estimate may be formed from the fact that one particular garden at Taschina, about 50 versts from Odessa, contained 1500 trees, on each of which were perched several dozens of young birds, while many hundreds sat on the larger trees, in the tops of which all roosted at night. In this garden the birds remained about ten days and then dispersed.

In the summer of 1856 the Marchese Oratio Antinori had as ample an opportunity of observing one of these wonderful breeding-assemblages near Smyrna. Large flocks of the birds appeared about May 15th, and others continued to arrive until June 5th, soon after which it became evident that they were breeding in the neighbourhood. It was not however until June 27th, that he, with Herr Gonzenbach, obtained any eggs. On the 30th those gentlemen ascended the hills above the village of Bournabat (the gardens of which were full of these Starlings—both old and young, for many of the latter had already left the nest) when they found every stone covered with the droppings of the birds, while higher up an extent of rock for 200 square yards looked as though lime-washed. On this spot says the first of these observers (Naumannia, 1856, p. 407) "the nests were by thousands, some quite open and uncovered, others so hidden under blocks of stone that these needed turning to examine them ; some were at the depth of about a foot, others could not be reached by the arm. The nests were so close together that they often touched. They were built without any skill, for the bird was content with a deepening scraped in the soil, in which were to be found some dry straws or leaves of the agnocasta, and very seldom a border of grass-stalks : I saw several in which the eggs lay on the bare ground." Around was evidence of the destruction caused by various four-footed foes, from jackals to rats, which preyed on old and young alike, while snakes probably took toll indefinitely of the eggs.

But what must have been in several respects a still more remarkable visitation has been recounted by Sig. de Betta (Atti del R. Istituto veneto, ser. V. ii.), as occurring at Villafranca in the province of Verona. In the afternoon of June 3d, 1875, a flock of about twenty birds alighted on the high ruins of the castle at that place, and was presently followed by another of about an hundred, which by their cries attracted the notice of the inhabitants. Later in the evening there arrived many thousands more, which joined the first comers and at dusk all dispersed in numerous troops over the country. Before daybreak the next morning, however, the people were awakened by the cries of some 12,000 or 14,000 Rose-coloured Starlings which met at the castle, and completely took possession of it, ejecting, after a sharp struggle, the other birds which were its ordinary occupants, and, since its walls did not even then afford sufficient accommodation, overflowed to the neighbouring housetops. The new arrivals at once set to work clearing out the rubbish from the holes and fissures they had thus gained, and, that done, on the morning of the 5th they began to build their own nests of twigs, straws, hay and other dry plants, leaving a hollow, lined with roots, leaves, moss and feathers, in the middle for the eggs. The next few days were occupied by constant strife for sites, and fierce contests between the males, who shewed however the most ardent attachment to their partners, and it was not till the 17th that Sig. de Betta (who made several visits to Villafranca at this interesting period) was able to ascertain that eggs, five or six in number, were laid; yet by July 10th the young, having been most assiduously fed with locusts by their parents, were fledged, so that some were able to take flight with their parents on the 12th. On the 14th all the remainder were seen to depart, and Villafranca to the great regret of its inhabitants was absolutely deserted by its unusual visitors. Large numbers of the young were, however, taken alive and a brisk traffic in them sprang up, but it was observed that they did not live long in confinement. The old cocks were also netted in the neighbourhood, while they were gathering food for their sitting mates, to such an extent as visibly to reduce their numbers. Their song is described by Sig. de Betta as being a continuous babble, mixed with harsh and disagreeable notes. The cry of the hens is equally stridulous and peevish. Both are begun early in the morning, continued for a long time, and renewed at intervals after feeding.* The eggs are of a glossy french-white, with a very faint tinge of bluish-green or greenish-blue, and measure from 1·12 to 1·08 by from ·85 to ·81 in.

The foregoing paragraphs will perhaps have sufficiently set forth the more remarkable facts in the propagation of this bird, but we must bear in mind that if its wonderful irruptions take place yearly they are not constantly directed to any one spot. Thus, as will have been inferred, its appearance in Southern Russia is extremely irregular, and near Smyrna, though it has more than once bred there since 1856, even ornithologists like Dr. Krüper and Mr. Seebohm have failed to find its nests, notwithstanding the arrival of large flocks in the vicinity; while such an invasion as that of Villafranca may confidently be asserted to have never before been witnessed in Italy. So too we have Mr. Barkley's testimony† that it only comes abundantly to Bulgaria in some years, and then takes up its quarters in heaps of stones or, as in 1867, when Mr. A. Cullen obtained its eggs, in a railway-cutting. Messrs. Elwes and Buckley saw the breeding-place of a large colony at Molchova in the Dobrudja in 1869, and it has been said to breed occasionally in the Cyclades. One circumstance concerning its settlements is too curious to be omitted here. Whenever the species has pitched in full force on a place, the surrounding district has been either simultaneously or not long after ravaged by locusts, which are eagerly sought by it, not only as food (though that is doubtless the principal object) but, as several independent witnesses aver, that it may kill them. The connexion of the two apparitions has been repeatedly discussed, and it has been often assumed that the birds have followed the insects. Dr. Stölker however shews (*loc. cit.*)

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* An English translation of the most important part of Sig. de Betta's memoir has been published in the 'Zoologist' for 1878 (p. 16), and one by Mr. Sclater of the Marchese O. Antinori's paper appeared in the same journal for 1857 (p. 5668). A French version of Von Nordmann's first communication was published in Demidoff's 'Voyage dans la Russie Méridionale' (iii. p. 307), whence an abstract of it has been given by Mr. Dresser, but his second and perhaps most valuable article seems to have been overlooked by most ornithologists.

† Bulgaria, &c.. By H. C. Barkley. London: 1877, p. 141.

that is not the case, for the former are generally the first to arrive and he wisely concludes that additional observation is needed to explain the mutual relation of the events. Another matter worthy of further attention is the fact that these birds have been frequently observed to affect trees or shrubs bearing rose-coloured flowers—as *Nerium oleander* and *Robinia viscosa*—among the blossoms of which, so like in tint to part of their own plumage, they may easily escape notice.

That these nomadic hordes visit Asia Minor and Europe from the east is unquestionable. In Africa the species is unknown save as a rare straggler to Egypt or Algeria. In Palestine its appearance, though often in large numbers, is very uncertain. Of its movements further eastward we have little continuous knowledge till we reach India, over nearly the whole of which it regularly appears, generally in the cold weather, but to this there are a few singular local exceptions, which at present seem inexplicable, and it strays occasionally to Ceylon and the Andamans. Frequenting some parts of the country in myriads, and at times doing great damage to the grain-crops, it has long attracted attention, yet hitherto it is not known to have bred there, and the prevalent belief, that it arrives in India from the westward, is probably correct. Yet it is reported by Dr. Severzov as breeding over the whole of Turkestan, though we find no evidence of its occurrence in the countries immediately west of the Indus except Mesopotamia, the north-western corner of Persia, and Armenia. We are therefore wholly ignorant of the route taken by the flocks which visit India.

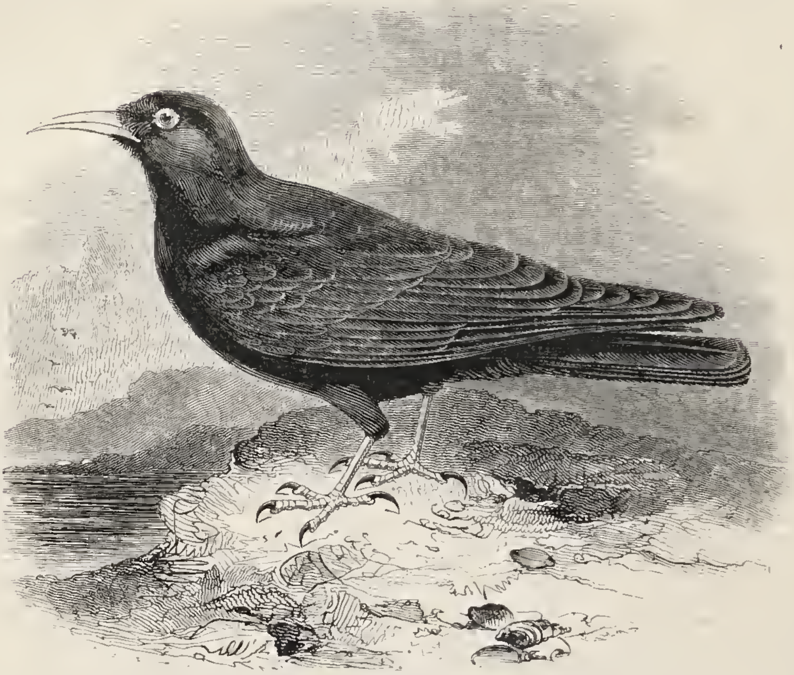
Returning to Europe we have proof of its irregular appearance in almost every country. Apart from Southern Russia, Turkey and Greece, in which it occurs most abundantly, flocks of from one hundred or more occasionally shew themselves in the eastern parts of the Austrian dominions, and smaller parties at rarer intervals penetrate further northward and westward. In Russia it has occurred at Saratov, and single birds have not only reached Finland, but, as has been known since the days of Linnæus, even Lapland. Several examples have been killed in Sweden, though none are recorded in Norway. To the southward its appearance in Italy has been already noticed. It has not unfrequently been taken at Malta; in Provence it occurs nearly every year, and, though a rare visitant to Spain, has at least once reached Seville. The whole number of recorded captures throughout Europe from Switzerland to Denmark and the shores of the North Sea and the Channel is by no means, however, so great as in the British Islands—a fact probably due in part to the greater publicity given to such events here than on the Continent, and in part also to the circumstance of its generally appearing at a season when in most countries the use of firearms is forbidden.

In the adult male in summer the bill is rose-coloured, except at the base of the lower mandible, where it is almost black: irides deep red-brown: head, neck and upper tail-coverts, black, glossed with violet-blue; wing-coverts black, with glossy reflections of purplish-blue and green, according as the light strikes them; wing- and tail-quills black with a steel-blue gloss; back, scapulars, and rump, pale rose-pink; chin and throat purplish-black; breast, sides and abdomen, rose-pink; inner wing-coverts greyish-black edged with rose-colour; thighs and lower tail-coverts black: legs and toes yellowish-brown; claws darker brown.

The whole length is eight inches and a half; from the carpal joint to the tip of the wing, five inches.

The adult female, at the same time, resembles the male, but wants the black patch at the base of the bill, has a shorter crest, and less bright tints; the inner wing-coverts and lower tail-coverts are generally edged with dull white.

In the young of the year, the bill is yellow at the base, brown along the culmen and at the point: there is no crest: the whole of the upper parts nearly uniform light greyish-brown, faintly striped on the top of the head with a deeper shade; the wings and tail a dark brown, the feathers edged with dull buffy-white; chin and throat dull white, the latter with indistinct brown stripes; the rest of the lower parts dull buffy-white, tinged on the flanks with ashy-brown; legs, toes and claws, brown.



PYRRHOCORAX GRACULUS (Linnæus*).

THE CHOUGH.

Fregilus graculus.

PYRRHOCORAX, *Tunstall* †.—Beak hard, slender, compressed, arched, and pointed. Nostrils basal, hidden by small, closely-set feathers. Wings long and graduated; first primary much shorter than the second, and about half as long as the third, the fourth the longest. Tail nearly even. Feet strong, tarsus longer than the middle toe, to which the outer toe is united as far as its first joint; claws strong and much curved.

THE CHOUGH in England is not a common bird, and is nowadays almost exclusively confined to the neighbourhood of the bolder parts of the sea-coast of the southern and western counties, where it inhabits the higher cliffs, though it apparently frequented a good many inland localities in former times. Merrett in 1667 speaks of it as found "in omnibus oris maritimis a Cornubia ad Doroberniam[*]", and there is poetical authority, at least, for its existence near Dover at a much earlier date. Shakespear, in his well-known description of the celebrated cliff which now bears his name, says in reference to its height:—

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* *Corvus graculus*, Linnæus, Syst. Nat. Ed. 12, i. p. 158 (1766).

† Orn. Brit. p. 2 (1771).

> The Crows and Choughs[†], that wing the midway air,
> Shew scarce so gross as beetles.—*King Lear*, Act iv. Sc. 6.

Gilbert White wrote in 1773 that these birds abounded and bred on Beachy Head, and in all the cliffs of the Sussex coast; but both in that county and in Kent the species is now believed to be extinct—indeed it seems to have been lost to the latter in Montagu's time (1802). The Author has seen it on the highest part of the cliffs between Freshwater Gate and the Needles in the Isle of Wight; but its habitation of this locality at present seems to be doubtful. In the Isle of Purbeck a few pairs still remain from Studland to Lulworth Cove—Gadcliff and St. Alban's Head being their stronghold. Further to the westward in Dorset the species does not now occur, and its existence on the south coast of Devon is questionable. In Cornwall, though very far from abundant, it is more numerous, and has been so long associated in popular estimation with that ancient duchy, that the prefix "Cornish" has been very generally applied to its name.* Upton, a canon of Salisbury, whose heraldic work, written about the middle of the fifteenth century, was published some two hundred years later†, speaks of it as especially found in Cornwall, some of the old families of which (as indeed of other counties also) bore it in their coat-armour. Turner, in 1544, though confounding it with its yellow-billed relation (*Pyrrhocorax alpinus*) mentioned Cornwall as the only locality for it in England, as, in 1586, did Camden (p. 73), who speaks of its dangerous and thieving propensities—carrying sticks of fire‡ and stealing money. On this account Carew in his 'Survey of Cornwall' (1602, fol. 36) termed it a "slaunder" of that county, to which it was peculiar—statements repeated by Childrey, in 1661.§ Charleton in 1668 (p. 68) speaks to its frequency in Cornwall, where, he adds, it was also called "Killegrew"—a name that seems to have become extinct. Borlase, in 1758, who had the advantage of coming after Willughby and Ray, is less credulous. He naturally makes the most of the bird, alleging that its imputed faults are really due to the Daw, and he was the first to refer to Upton, as above quoted. In Cornwall now it is extremely local and very far from common, being only met with sparingly in certain spots, chiefly in the northern coast, yet breeding, or attempting to breed, there annually. Dr. Bullmore says that some years ago large numbers used to be caught by baited steel-traps on the Perran Sands. On the north coast of Devon the Chough is said still to have a few resorts, and on Lundy Island it is reported to be yet numerous. In Somerset a few of this species used to breed regularly near Minehead; but, their nests being, says Mr. Cecil Smith, one year destroyed by some masons, the birds never returned to their old quarters, and the Chough's last appearance in that county was at Bagborough, quite away from the sea, where, in April, 1868, a pair seemed disposed to build in the church-tower, until they were shot. On the northern shore of the Bristol Channel, and thence round Wales, a good many spots, chiefly in the counties of Glamorgan, Pembroke, Anglesey, Flint and Denbigh, appear to be still inhabited by the Chough In the county last named, Montagu says that a pair had bred for many years on the ruins of a castle in the vale of Llangollen. Further to the north Mr. Brockholes stated, in 1874, that he had some years before met with a flock in a field at Leasowe in Cheshire. It was reported to Mr. More as breeding occasionally in Westmoreland and regularly in Cumberland, and it was formerly resident in the Isle of Man, particularly its southern part and the rock called the Calf of Man, where it used to breed, and may perhaps still do so.*

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[*] Meaning no doubt Dover; but it may be noted that another Dorobernia, the city of Canterbury, bears Choughs in its arms. Pennant in the editions of his 'British Zoology', published in 1776, said that they were found in small numbers on Dover Cliff, "where they came by accident:" a pair sent from Cornwall having "escaped, and stocked these rocks." No date is given, but as the passage is not in his earlier editions, we may infer that the event was recent. Merrett's testimony, which was possibly unknown to Pennant, induces the opinion that he was misinformed, or else that his statement refers to a restoration of the species to its old haunts.

[†] The word Chough was doubtless to some extent interchangeable with Daw in Shakespear's time, as it is at this day, even in Cornwall, according to information received by the Editor from Mr. D. Stephens, of Trevornan. But that the poet was acquainted with the present species is proved by the epithet "russet-pated" applied to it by him in another place (Midsummer Night's Dream, Act iii. Sc. 2). The meaning of this epithet has given rise to much ingenious discussion, but the late Mr. E. T. Bennett, in 1835, doubtless supplied its true explanation, when he suggested (Zool. Journ. v. p. 496) that the correct reading is "russet-patted" *i.e.* "red-footed" (*patte* being a known equivalent of foot), and this view has been adopted by Mr. Aldis Wright in his recent edition of the play (Clarendon Press Series, pp. 30, 112).

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* This usage is not limited to English authors Sibbald, in 1684, named the bird the "*Cornwall Kae*", and that is all he says about it; but he has "Cornix, the *Chough*" as well (ii. pt. 2, p. 15).

† Nicolai Vpton de studio militari. Ed. Bisse, Londini: 1651, fol. p. 194.

‡ The bird's red bill possibly suggested the charge.

§ The Editor finds that the passage before quoted (page 191) from this author is founded on Carew's evidence (*op. cit.* fol. 25 *verso*).

In Scotland, as Mr. Gray well remarks, the history of this bird presents some facts worthy of notice. Bishop Leslie in his treatise 'De Origine &c. Scotorum' published in 1578 (Ed. 1675, p. 17) stated that it bred in his time between St. Abb's Head and Fast Castle, where, according to Dr. G. Johnston, in 1832, Mr. A. Baird found it so doing (Hist. Berw. Nat. Club, i. p. 6). Turnbull, in 1867, supposed that the stock was reduced to a single pair; but Mr. Gray, about 1869, said it was questionable whether one had been seen there, its only station on the east coast of our island, or at Troup Head, which was formerly another of its haunts, for the last ten or fifteen years. Moreover, it appears certain that not so very long ago this bird inhabited inland stations from which it has utterly vanished—as the Corra Linn, the Campsie Fells, the Clova Mountains, Glenlyon and Achmore —particulars respecting which are given in detail by Mr. Gray. Islay seems to be the only place in Scotland where it has preserved its numbers, for from the Solway to Skye, at present considered its northern limit, though there are many spots that it still frequents, there is no other in which they have not greatly diminished, while from some of the Hebrides and adjacent parts of the mainland it has disappeared as entirely as from the Scottish localities first mentioned. In Pennant's time it inhabited Sutherland, and in 1848 St. John saw it there, but Mr. Harvie Brown has since failed to find it. Much the same story is to be told of this bird in Ireland. Though formerly, as Thompson states, inhabiting precipitous rocks in various parts of that country, and among them several inland localities, it would seem now to be found only on the coast and islands, and almost everywhere in reduced numbers. The dwindling away of the Chough throughout the British Islands is undeniable, and speculations have been hazarded to account for the fact. As none of them seem based on sufficient observation they need no further notice here. It has been often remarked, however, that where the Chough grows rare or becomes extinct the Daw appears or increases in numbers, though whether the latter expels as well as replaces the former is not yet established.

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* A few instances of Choughs straying from their haunts have been recorded. Thus Mr. Lees mentions (Mag. N. H. i. p. 394) one shot in Worcestershire, November 1826; an anonymous writer (Field Nat. i. p. 129) one killed in Wiltshire, August 1832, Mr. A. C. Smith another in the same county, and Blyth (Mag. N. H. ix. p. 636) one that occurred in Surrey. Two more are noticed by Mr. Morris.

This bird feeds on insects, crustaceans and berries, occasionally on grain and even, it is said, on carrion. It seeks its sustenance along the shore, on the cliffs and in the adjacent fields, sometimes following the plough to obtain the grubs that may be thereby exposed. The nest is placed in a cleft or other hole among high rocks and stones, or in ruined buildings. It is generally hidden, at some distance from the opening, and is built of sticks with a lining of wool or hair. The eggs, four or five in number, are of a french-white, sometimes tinged with yellow, freckled, spotted, streaked or blotched with several shades of ash-grey and light brown, and measure from 1·63 to 1·33 by from 1·14 to 1 in. Its cry is somewhat like that of the Daw, but from its more musical and ringing tone is easily recognized. Its flight much resembles that of a Rook, and the pinions when extended shew the ends of the primaries distinctly apart. It takes wing or alights with ease; and, from its comparatively long legs, its appearance when perched on a projecting stone, or walking on the short turf* of the cliffs, is graceful. The sight of a pair of Choughs or more, with their glossy black plumage, their red bill and legs, on a green bank, engaged in preening their own or their companions' plumage, or basking in the sunshine, is one that will gladden any true naturalist, and lend an additional charm to the fine scenery which they generally affect.

The Chough inhabits the Channel Islands, being especially numerous in Guernsey, but is only found accidentally in the north of France. It however frequents Belle Isle, and this appears to be its only maritime resort outside of the British dominions, for in what other country soever it may dwell, its station is always inland and in mountainous or hilly districts. Thus it abounds in some parts of the Pyrenees, and occurs in elevated situations throughout Spain and Portugal. It breeds commonly in Palma, one of the Canaries, but is not found elsewhere among the Atlantic Islands. Though local it inhabits the higher lands of Barbary from Tetuan along the Algerian Atlas. Returning to Europe it is found again in the hill-country of Provence and Dauphigny, among the Vosges and the mountainous parts of Southern Germany, but there very sparsely. It is a scarce inhabitant of the Swiss Alps to the height of about 10,500 feet, and thence is found at corresponding elevations along the Appenines, and in the Italian Islands—Sardinia and Sicily. It occurs, says Zawadski, on the Central Carpathians. Its presence in Transsylvania is not proved, but it is found, though rarely, in the highlands of Styria and Carinthia. Missing the intervening country, it reappears in Greece, and is abundant, says Mr. Danford, in Asia Minor. It is not recorded from Palestine, though it inhabits the mountains of Abyssinia and Arabia, and may be traced through Persia and Afghanistan to the Himalayas, whence in winter it visits the plains of India, and Northern China. The Chough of several of these Asiatic countries has been indeed thought to differ from the

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* Young birds taken from the nest and kept alive in gardens, where they soon become tame, shew great unwillingness to step off the gravel paths or masonry-work of their place of detention.

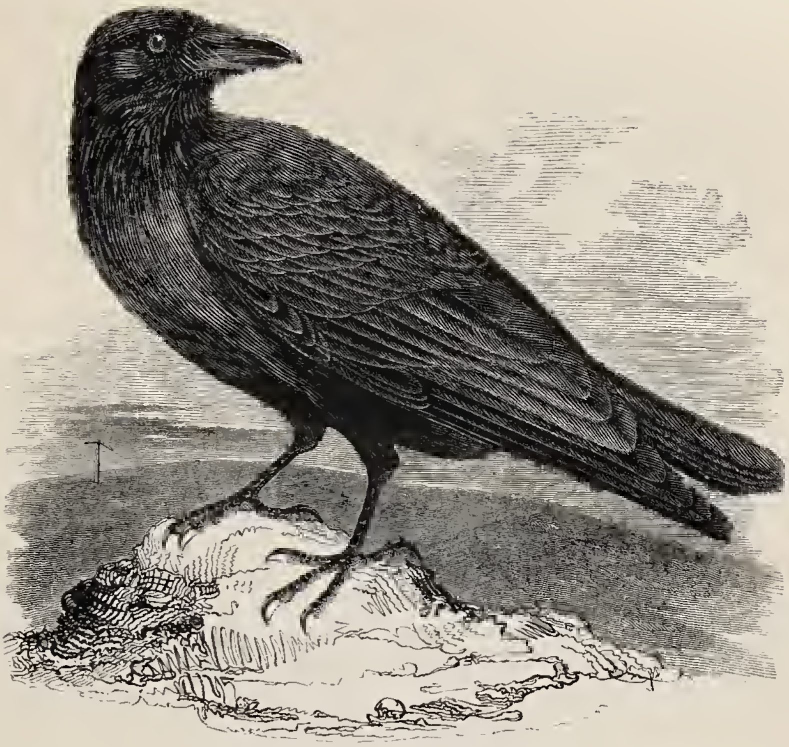
European, but Mr. Dresser says that, after carefully examining a large series of specimens, he cannot find any specific distinction. It is resident in Dauuria and Turkestan, in some places breeding in the roofs of houses and churches. In the Caucasus it is abundant and it seems to frequent the Ural up to the Government of Archangel.

The whole plumage is jet black, glossed with steel blue which has a violet tinge on the flight-feathers and tail: the irides are of two circles, the inner red, the outer blue; the eyelids red; the inside of the mouth and the tongue yellow; the beak, legs and toes, coral-red; the claws black.

The male measures nearly seventeen inches in length. The beak one inch and seven-eighths: the wing from the carpal joint to the tip eleven inches and three-quarters; the third, fourth and fifth primaries are nearly equal, but the fourth the longest.

A female, sent from Tyneham by Mr. Thomas Bond, measured fourteen inches and a half in length; the beak one inch and a half; the wing from the carpal joint to the tip nine inches and three-quarters; the wing-quills were not so decidedly black as those of the male.

Young birds, as Mr. J. Lumsden informed Mr. Dresser, have the bill and legs at first dull brownish-orange which turns to reddish-orange and finally becomes red. The plumage has but little purple gloss until after the first moult.



CORVUS CORAX, Linnæus.*

THE RAVEN.

Corvus corax.

CORVUS, *Linnæus*†.—Beak hard, stout, compressed, straight at the base, arched towards the point, and sharp at the edges. Nostrils basal, generally hidden by stiff feathers directed forwards. Wings long and graduated; the first primary much shorter than the second, but more than half as long as the third, the fourth the longest. Tail more or less graduated. Feet strong; tarsus longer than the middle toe, to which the outer toe is united as far as its first joint; claws strong, curved and sharp.

THIS, by far the largest British species of the Order *Passeres*, and among its exotic members only equalled in size by two or three allied forms, has been from very ancient times one of the best known of birds. The wide range of the Raven in the northern hemisphere has doubtless also

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[*] Syst. Nat. Ed. 12, i. p. 155 (1766).

[†] *Loc. cit.*

contributed to its recognition, while its association with the cherished beliefs of many nations causes it yet to be regarded with awe and reverence even by those who hate it. Bold and sagacious, with a quick eye and, possibly, a keen sense of smell, it must have been the familiar follower of the prehistoric hunter and fisher, as, where it now exists, it is of their successors, feasting on the refuse of their spoils and hardly molested by them; but it must always have been an object of distrust, or something stronger, to herdsmen. No sooner does an animal betray any sign of weakness, than the Raven is on the watch for the opportunity, and, cautiously awaiting the prostration of its victim, it begins its attack on the eye—especially if the creature be large and still alive, after which, applying itself to the perinæum, it proceeds gradually to draw out the intestines, until the muscles of the eviscerated carcase alone are left to furnish a future meal. This, however, is a state of things which follows chiefly on the bird's acquaintance with man and the beasts he has domesticated; for, though undoubtedly the Raven is not slow to avail itself of any carrion that falls in its way, it is yet far from being entirely dependent on such means of subsistence, but hunts and takes prey for itself much after the manner of some of the *Accipitres*, whereby it does not incur the reprobation with which it is so often, and often so truly, charged. A pair of Ravens, known for many years to the Editor, lived almost exclusively on moles, as he had ample facility of determining from repeated examination of the pellets of bone and hair which they, like so many other carnivorous birds, cast up; and unless Ravens, as is now rarely the case in England, happen to be plentiful in any district, the amount of harm they do is insignificant. Yet it is otherwise in the wilder and mountainous parts of Britain, and considerable loss is there inflicted by the Raven on the owners of sheep, while even larger cattle suffer from its attacks. But, as Saxby has well shewn, these are almost invariably the beasts that, in the last stage of feebleness or want, are left to take their chance on the barren hillside and thus meet their fate, the blame being due rather to their careless or cruel masters than to the Raven that puts an end to their wretched existence. Like the other birds of this genus, the Raven is not particular in its diet: animal food of any kind is welcome, and on the sea-coast the shore is closely searched for dead fishes, mollusks, crustaceans or other invertebrates, while, inland, grain is occasionally eaten.

The Raven inhabits high rocks or open plains, where danger may be seen and avoided. For that reason it, in these days, generally avoids woodland and enclosed countries, though in truth, it having now been extirpated throughout most of the interior of England, one cannot positively assert that this was so formerly. There was a time, and that not so long ago, when nearly every district, even in the midland counties, had its pair, well known to the whole countryside, while equally well known was the tall "Ravens' tree" in which, year after year, the old nest was refurnished and the eggs laid. Space would here fail to repeat the numerous accounts that have been published of these historic haunts, for there are few faunists who have not dwelt upon the fortunes of the race of Ravens inhabiting the district of which they treat, and the narratives of Gilbert White, Bishop Stanley, Mr. Knox and other more recent writers are remembered by all who have read them. In some few cases, protection has been successfully obtained for these ancient tenants by an influential neighbour; but too often, and especially as superstition, within the last twenty or thirty years, has gradually lost ground, the most deadly drugs have been covertly laid by the shepherd or the gamekeeper, and the ancestral seat rendered desolate. It used to be observed that when one of the pair of birds was killed, the survivor generally and quickly obtained a new mate, but since the number of Ravens in England has now been so much reduced, this happens more and more seldom, while still more rarely does it at this day occur that should both birds be killed their place is taken by a fresh pair. These remarks of course refer chiefly to inland localities, for the rocky parts of the coast are still fairly stocked, and there are yet districts where not unfrequently the practised ear will catch the hoarse and characteristic croak of a wanderer, which then may be descried speeding its way or circling high in air as much in quest of a safe lodging as of food.

These birds breed earlier in the year than any other wild British species. If all has gone well with them, and the season be mild, they will begin the repair of their accustomed nest about the middle of January, and a couple of weeks after the eggs will have been laid; but generally all this happens a month later. When the nest is built in a tree, one that, from its height, form or branchless stem, presents a difficult access to marauders is usually chosen, and a stout crotch commonly supports the structure, which as years go by becomes a huge mass of sticks. But by far the greater number of Ravens frequent the sea-coast, and there some convenient ledge or cranny of the cliff, protected by its elevation or by an overhanging crag, supplies a site. In all cases however, the outworks being of sticks or some vegetable substitute, the lining is of soft animal material—sheep's wool, rabbits' fur and, in parks, the shed winter coat of deer. The eggs are from four to six in number, of a bluish-green colour varying in depth of shade, and more or less splashed, blotched and streaked, or sometimes speckled and spotted, with dark olive-brown which often deepens to black, besides blotches of greyish-purple. Some eggs, however, have scarcely any other markings than a few streaks or smears of light olive-brown.* They ordinarily measure from 2·16 to 1·55 by from 1·39 to 1·28 in.; but a dwarf egg may not exceed 1·52 by 1·12 in. Incubation lasts some twenty days, during which time the male not only feeds his mate as she sits and occasionlly takes her place on the eggs, but repels by repeated attacks almost every bird, from an Eagle to a

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* An extraordinary variation is shewn by a nestful of four eggs sent from Unst in 1854 by Mr. J. Smith of that island. The ground-colour of these specimens is a warm, creamy white; and the markings, which are quite normal in size and shape, consist of the greyish-purple blotches often seen, with specks, spots and blotches of deep reddish clove-brown, so as closely to resemble the eggs commonly laid by the South-African *Corvus capensis* or by the birds of the genus *Porphyrio*. A similar aberration of colouring will have to be mentioned in treating of the larger Gulls.

Pigeon, that approaches the nest. At this period and earlier in the year his actions are worthy of study. Until his partner takes to her task, he never leaves her, but follows her every course—now near now further off—and occasionally approaching very close to her, turns over sideways on his back as he flies, shooting in that position in front of or past her, and, uttering a sonorous yet tender note, then resumes his natural attitude of flight. The wants of the nestlings are assiduously supplied by their parents, and for some few weeks after the offspring are flown the whole family remains in company; but, when fully able to provide for themselves, the young birds are invariably driven from the home in which they have been reared and forced to seek a new abode or to become wanderers.

Though possessed of great power as well as courage, Ravens seldom make any other attempt to defend their nest against man than a show of resistance, and indeed they have in general every reason to shun so deadly an enemy as he often proves to be. Yet in the exceptional cases where they have no experience of molestation they become bold beyond most kinds of birds.

Northward in Europe the Raven is plentiful in the Færoes and Iceland, especially near the fishing-stations, where it gets a good living from the offal by which they are surrounded; but in the former its abundance is checked by a somewhat heavy tax (*Næbbetold*) laid upon the people of the different districts, and only to be redeemed by the production of a fixed number of its beaks—its depredations on the useful Sea-fowls which breed on the cliffs of those islands being the chief cause of this peculiar fiscal law. In Norway and Sweden, even to the extreme north, it is also pretty common, mostly along the coasts, but also inhabiting the wilder parts of the interior. In Spitsbergen it is said to have been seen only once (Ibis, 1875, p. 272). It ranges over the whole of the Russian dominions to Saghalien, but seems to be replaced in China and Japan by one or more forms of a bird (*Corvus japonensis*) concerning which doubts are entertained whether it should not be rather reckoned a Crow.

The southern range of the Raven in Asia is not well determined; but it would seem to occur throughout Thibet, in the eastern Himalayas (except Sikim) and thence westward to Kumaon, Ladak, Cashmere, the Punjab, Sind and Affghanistan. It is common in the highlands of Persia, in Armenia, Anatolia and Palestine. Mr. Wyatt believes that he twice saw it in flocks near Sinai, but it does not appear in Egypt, nor indeed anywhere in Africa. It is reported as inhabiting Cyprus, Crete and generally the other islands of the Mediterranean, though Mr. Wright never observed it in Malta. Throughout the rest of Europe it is more or less numerous.

In the Nearctic Region it ranges from East Greenland to Oonalaska, and from Cape Lupton, where it was found breeding by the last Arctic Expedition, to Guatemala, or perhaps to Honduras (Ibis, 1860, p. 112), but varying greatly in abundance according to locality. Thus it is more or less plentiful over the whole of the fur-countries, and as a rule is more generally distributed throughout the western than the eastern portion of the North-American continent, for it is common on the Pacific coast from Sitka to San Diego, while in New England and some of the Atlantic States it is very rare. There are districts also of the interior, even to the southward, in which it is plentiful, as in Arizona, where, according to Dr. Coues, it is resident; and it seems to be equally abundant in Texas and on the high plains of Mexico. Audubon wrote of it as being in some degree migratory in the United States, but since it was observed to brave the severity of an arctic winter* in some of the more northern localities visited by our explorers, the movements noticed by him are probably limited to the young which, in the New as in the Old World, are driven away by their parents.†

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* The rigours of such a winter are curiously exemplified by the fact that at Port Bowen, the Ravens were frequently observed to have a white ring about their neck, caused by the condensation of their own breath.

† Examples of the Raven from many extra-European countries have been specifically separated by some writers from the true *Corvus corax*; but Mr. Dresser, after due consideration, reunites most of them thereto—the Ravens of Africa (*C. umbrinus*, *C. affinis* and *C. tingitanus*), two of which also occur in South-western Asia, being, however, recognized as distinct.

The beak is black: the irides brown and grey: the whole plumage black, glossed with steel-blue and purple; the throat-feathers elongated and pointed, and more lustrous than those of other parts: legs, toes and claws, black.

The whole length of the male is twenty-six inches. The wing, from the carpal joint to the tip, seventeen inches and one-quarter: the first primary four inches shorter than the second, which is one inch shorter than the third; the fourth a little longer than the third, and the longest in the wing: the primaries are narrow and pointed, the tertials broad and rounded. The tail cuneate in form.

The female is smaller than the male; and her plumage, as also that of the young before their first moult, has less metallic lustre.

As was before announced (vol. i. page 263) it is intended in this Edition only to notice some particular cases of the partial or total albinism among birds which has been so frequently observed. White Ravens have been known from very ancient times, though their rarity was always admitted, and Aristotle attributed their want of colour to the season of the year and cold weather. The fact that pied varieties of the Raven have been described as forming a distinct species, the *Corvus leucophæus* of Vieillot, makes a few words upon them necessary. They seem always to have been most numerous in the Færoes, but it has long been perfectly well known there that they form no peculiar race, and that they are most frequently the progeny of perfectly black parents—a pied bird, or perhaps a second, being found in a brood, all the rest of which are normally coloured. The amount of white they display may vary from a few feathers to the greater part of the plumage, the toes and claws also being not unfrequently affected in like manner. Pied Ravens have occasionally occurred in the British Islands, and Macgillivray mentions one which he saw in Harris. In some examples, from various countries, the base of the feathers, especially those of the neck, will be found to be quite white, without shewing, however, any trace of it as the plumage lies in its natural position.

Among British birds there is none able to imitate the varied sounds of the human voice more successfully than the Raven, and many instances are known of its talking with a distinctness of articulation and accuracy of tone that are almost perfect, while it will occasionally utter phrases that by their accidental aptness are positively startling to the hearer, and produce an effect not to be exaggerated even in fiction. Here there is no need to repeat any of the oft-told stories in proof of its mocking man's speech, but the fact that it can do so leads us to consider the means whereby the exercise of that faculty is possible, and this, it will be found, has a direct bearing on some important points in Systematic Ornithology.

The various powers of voice possessed by birds in general, caused by the diversity of structure of the windpipe, have justly excited the attention of many of the greatest zoologists, from Cuvier to those of our own day, inducing them to carry on investigations which have finally contributed (among other things) to the establishment of a far sounder mode of classifying the forms combined in preceding Editions of this work in an "Order" to which the name of INSESSORES was applied by Vigors*. Without attempting to recount fully the progress of these researches, or the way in which one investigator after another improved on the method of his predecessor, it will be sufficient and expedient here to state briefly the chief results that have been reached, so far as they affect the members of the British Fauna. It has been long known that each of the Orders *Picæ* and *Passeres* established by Linnæus was composed of a very heterogeneous assemblage, artificially grouped together, and in particular that two of the genera, *Columba* and *Caprimulgus*, included in the latter must be removed from the rest. Further examination has shewn that several genera of *Picæ*, such as *Certhia*, *Sitta*, *Oriolus* and *Corvus*, have a much greater affinity to the majority of groups contained in his *Passeres*, and these genera, with the addition of *Lanius* (placed by him among the *Accipitres*), have accordingly been referred thereto. This determination, effected by Nitzsch, and based on the structure of the vocal organs, was published in 1829. As the name *Picæ*, through the removal of the Crows (including Brisson's genus *Pica*) became inapplicable to the remainder, the word PICARIÆ was subsequently proposed by Nitzsch for them, the genera *Caprimulgus* and *Cypselus* (the latter having in the meantime been separated from *Hirundo*) being also added. Though doubtless the *Picariæ*, as thus constituted and published in 1840 by Burmeister, contain several groups that differ from others ranged with them as greatly as they do from the *Passeres* in their reformed condition, ornithologists are by no means agreed as to the best way of dividing the assemblage, and accordingly for simplicity's sake the term *Picariæ* will be here used exactly in the sense, so far as British forms are concerned, in which it was used by Nitzsch. He did not know, however, that many genera or families, which he left among the *Passeres* (or *Passerinæ* as he called them), do not possess the kind of vocal apparatus, the presence or absence of which had been the prime cause of the new division. This was due to the fact that no European Passerine bird (for to European species his dissections were confined) lacks it, and the discovery of *Passeres* (now known to be chiefly American) not possessing this particular structure, made some years later by Johannes Müller, compelled a further division of the Order, based accordingly again on the vocal apparatus. It is needless here to go further into this matter. It will be enough to say that, after various modifications suggested, among others, by Blasius, Dr. Cabanis, Gloger, Prof. Huxley and Sundevall, Prof. Garrod seems to have verified the existence of two well-marked groups of PASSERES, to which he has applied (Proc. Zool. Soc. 1876, p. 507) the names *Acromyodi* and *Mesomyodi*, according as the song-muscles (presently to be described) are attached to the end or to the middle of the incomplete rings forming the bronchial tubes. The latter group, not being represented in the British Fauna, may be here disregarded: the former group he separates into a Normal and Abnormal division. This last contains no British form, and therefore the Normal or true *Passeres*—*Oscines* as they are termed by some—await our attention.*

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* This "Order" was propounded in 1823 (Trans. Linn. Soc. xiv. p. 425), and the name published in 1826. It comprehended all the genera included by Linnæus in his Orders *Picæ* and *Passeres*, with the exception of *Columba* and the addition of *Lanius*. In accordance with the principles of the "Quinary System"—based on an hypothesis then and later adopted by many of the best English zoologists, but now finding few or no adherents—the new Order was divided into five "tribes":—*Dentirostres*, *Conirostres*, *Scansores*, *Tenuirostres* and *Fissirostres*, an arrangement followed by the Author of this work. That these "tribes" were unnatural groups will presently appear, and accordingly allusion to them is omitted throughout this Edition.

So far as structure goes there can be no doubt of these normal *Passeres* forming an extremely homogeneous group, perhaps one of the most homogeneous groups of the same extent to be found in Nature. The more important osteological features are common to all its members, and means whereby the comparative anatomist may distinguish the various sections into which convenience requires its separation must be sought in modifications to which in several Orders of Birds—to say nothing of other Classes of Vertebrates—he would attach but slight value. And not only is there this great uniformity in the skeleton, but, so far as known, the arrangement of the vocal organs is nearly identical throughout these true *Passeres*, while at the same time it is unlike that found in any other group of Birds. The bulk of the Raven renders it of all the British members of the Order that in which these organs can be most advantageously studied, and the figures of them here introduced are given of the natural size, being copied, and the description modified, from the Author's original memoir (Trans. Linn. Soc. xvi. pp. 305–321, pls. 17, 18).†

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* The Editor desires to express his thanks to Prof. Garrod for his valuable assistance in modifying the following account of the vocal organs of the Raven, so as to adapt it to the present state of knowledge. The Editor however must at the same time say that his friend's abnormal *Passeres* (the Australian genera *Menura* and *Atrichia*) seem, from osteological characters, of greater significance than those afforded by the voice-muscles, to be further removed from the true *Passeres* than are many if not most of the *Mesomyodi*.

† The excellent description and figures of the trachea of the Rook and other birds, given by Macgillivray (Br. B. ii. pp. 21–37, pls. x.–xii.), may also be advantageously compared.

The organ of voice in Birds generally may be regarded as composed of four parts : (i.) the glottis or superior larynx, (ii.) the windpipe or trachea, (iii.) the inferior larynx or syrinx, and (iv.) the bronchial tubes or bronchi. The glottis opens into the mouth at the root of the tongue. Fig. 1 of the accompanying woodcuts shews (*a*, *a*, *a*) the principle cartilage, lying upon the pharyngeal portion between the hyoid or tongue-bones, and apparently performing the double office of the thyroid and cricoid cartilages in Mammals. It is thin and nearly triangular, the posterior corners curving upwards. In the midst is the long and narrow orifice of the windpipe, behind which the surface is beset with papillæ pointing backward, and serving in the absence of an epiglottis, or cover of the opening, to direct

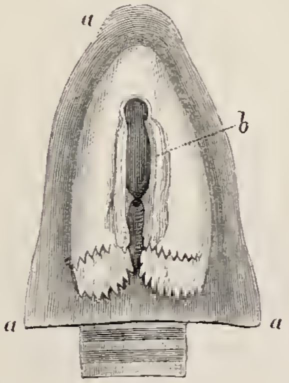

FIG. 1.

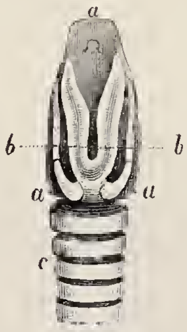

FIG. 2.

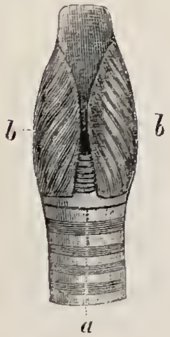

FIG. 3.

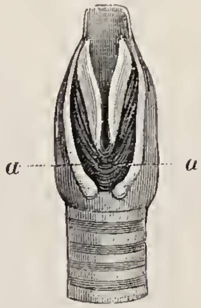

FIG. 4.

and convey the food to the gullet, or œsophagus, and hinder its return so as to enter the windpipe. This orifice is bounded on either side by the arytænoid cartilages, seen more plainly in Fig. 2 (*b*, *b*), where the greater part of the cricoid cartilage (*a*, *a*, *a*) has been removed, together with the investments of the windpipe (*c*), that the bony rings of which this is composed may appear more clearly. Figs. 3 and 4 illustrate the muscles which control the size of the orifice, and constitute one of the accessory means by which the sound of the voice is regulated. Of these there are two pairs. The first, of which a portion is shewn in (Fig. 3 (*a*) and the whole displayed in Fig. 4 (*a*, *a*), extend from the upper portion of the cricoid cartilage (Fig. 2, *a*) along the two branches of the arytænoid cartilages (Fig. 2, *b*) in the outer edge of each of which they are respectively inserted, and serve to close the orifice. The second, sufficiently visible in Fig. 3 (*b*, *b*), are those which open the orifice, and arise from the lateral and posterior portion of the cricoid cartilage (Fig. 2, *a*), and their fibres, passing over the closing muscles just described, are inserted on the inner edge of each arytænoid cartilage (Fig. 2, *b*).

The tube of the windpipe, or trachea, is composed of two membranes enclosing numerous rings forming a cylinder from end to end. At first cartilaginous, they become bony as the bird grows older, and their ossification begins in front and gradually extends backward towards the gullet*. So far then there is no essential difference between the Raven and other birds in the parts described.

The inferior larynx or syrinx, which is the real seat of the vocal organ in Birds, is at the bottom of the tube, and is formed by the more or less firm union of several of the lower bony rings of the trachea, as shewn in Fig. 5 (*b*), where the parts are divested of their attachments, and again in Fig. 6 (*b*) where one bronchus has also been removed to exhibit the inner side (*c*) of the other, together with a median cross-bone, as represented in Fig. 7 (*a*, *a*), extending from behind to the front, and dividing the tube into two equal parts, from the outer side of each of which the bronchi spring and diverge to the lungs*. From the upper edge of this cross-bone a crescent-shaped membrane, concave above, ascends for a short distance inside the main tube, and thus forms a "three-way piece".

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* In certain birds ossification of all the tracheal rings is not completed. Various inequalities of diameter and convolutions of the tube (some of which will be hereafter described and figured) also occur, producing, as might be expected, particular effects on the voice. Generally the proportionate length of the trachea deserves consideration, for shrill notes are produced by short tubes and *vice versâ*. On the structure of the tube, too, certain effects depend. As a general rule, though not without exceptions, birds which possess strong and broad cartilages or bony rings have a monotonous and loud voice, while slenderer rings with wider interspaces allow a freedom of motion producing a corresponding variety in the scale of tone.

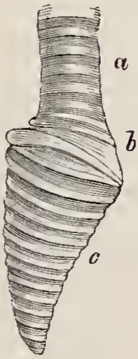

FIG. 5.

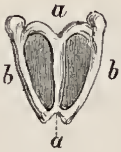

FIG. 7.

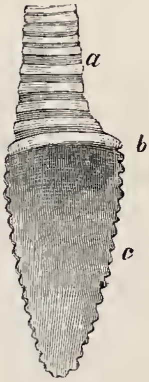

FIG. 6.

The bronchi are, like the trachea, perfectly flexible, but the rings of which they are formed, though similarly connected with one another by membrane, as shewn in Fig. 5 (*c*), are incomplete on the inner side, which is composed of a delicate membrane, known as the *membrana tympaniformis*, seen in Fig. 6 (*c*), on the change of form and length of which some of the varieties of intonation depend. These tubes diminish in size as they approach the lungs, and they are slightly attached to each other and to the œsophagus.

The muscles of the glottis consist, so far as is known, uniformly of the two pairs already described, but those of the syrinx, which are the real vocal muscles, vary in number in different groups, reaching their maximum in the true *Passeres*, which have always five pairs. These are represented in their natural position in Figs. 8–10, giving a front, back and side view of these parts in the Raven, while Fig. 11 repeats the last but shews three of the five pairs partly displaced to render their superior attachment more obvious. To describe these muscles more particularly it may be said that two pairs of them have a common origin about the middle of the trachea, and, descending on its outside, divide at a short distance above the end of the tube; one of them —the long posterior tensor (*f*), being directed downward and backward, is inserted at the extreme posterior end of the first half-ring of the bronchus, while its counterpart—the long anterior tensor (*e*), passing from the place of separation downward and forward is inserted below the extreme point of the last ring of the trachea. Within the angle formed by the divergence of each of these pairs, a third slender and cord-like muscle—the sterno-tracheal (*d*) arises on each side and goes off to be inserted in the sternum. The fourth pair —the short posterior tensor (*h*) is the smallest of all, and, arising near the middle of the lower end of the trachea, its fibres, directed obliquely downwards and backwards, are inserted on the extremity of the first of the incomplete rings of the bronchi. The fifth pair—the short anterior tensor (*g*) springs like the last from the middle of the trachea, but is somewhat larger and thicker, appearing as though made up of several small muscles in close contact. Its direction is obliquely downward and forward; it is partly hidden by the long anterior tensor (*e*), and, attached by a broad base to the last ring of the trachea and to the cartilage immediately below, it reaches the extreme end* of the first or second of the bronchial half-rings.

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* In one group of Birds—the American Vultures (*Cathartidæ*)—and therein only, it is believed, there is no special modification of the trachea into a syrinx.

Thus while the lungs govern the volume of air as well as the force with which it is expelled, the syringeal muscles influence both the diameter and the length of the bronchi, and the absurdity of the vulgar belief that to enable a bird to "speak" the slitting of its tongue is necessary ought hereby to be manifest. The principle on which the vocal organs in Birds are framed is that which prevails in wind-instruments generally; the notes in the ascending scale being produced by a corresponding contraction of the diameter or the length of the tube, and *vice versâ*.

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* As before stated, in the other great division of *Passeres*—Prof. Garrod's *Mesomyodi*—none of which are British or even European, such forms as possess muscles that reach to the bronchi, have their muscles joined to the middle and not the extremity of the bronchial half-rings.

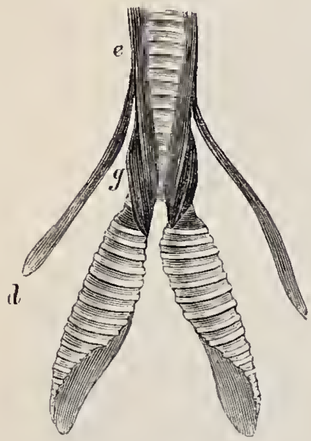


FIG. 8.

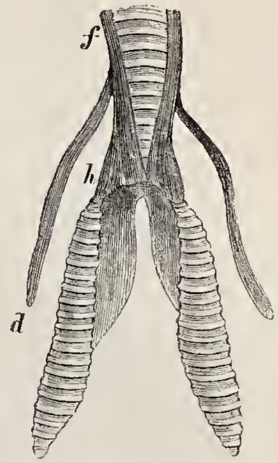


FIG. 9.

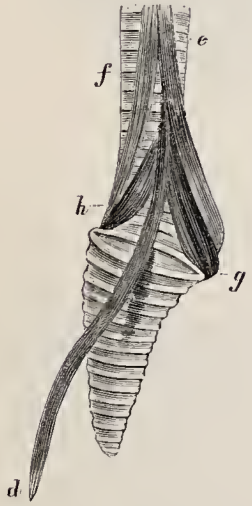


FIG. 10.

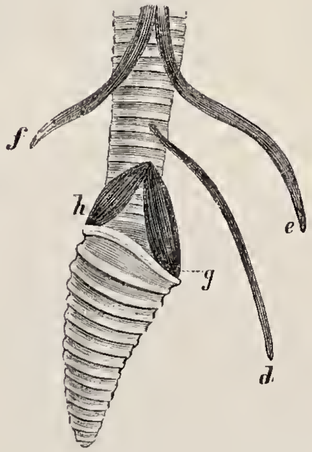
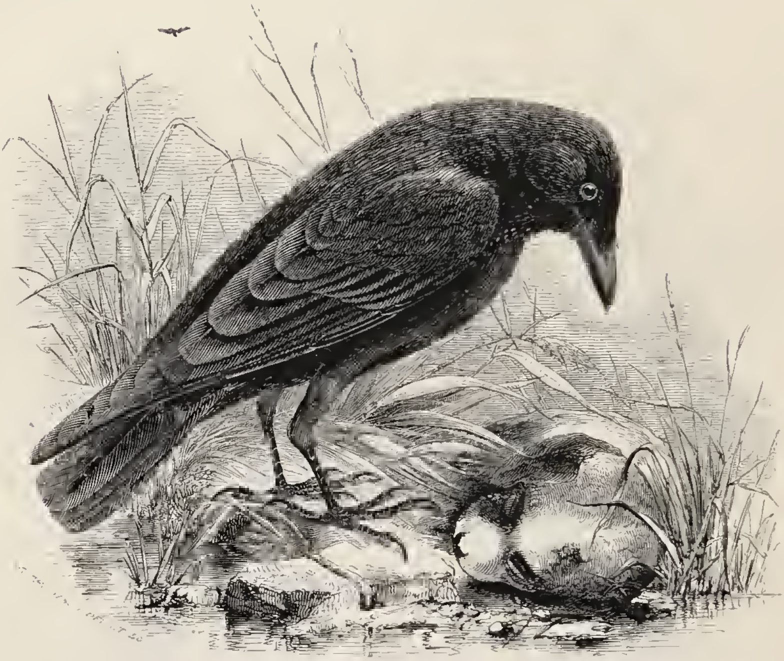


FIG. 11.



Corvus corone, Linnæus*.

THE BLACK CROW.

Corvus corone.

Evidence accumulated during many years, through the observation of ornithologists of many countries and of many schools, seems at last to compel the conclusion that no specific distinction can be maintained between the birds long known scientifically as *Corvus corone* and *Corvus cornix,* and in English as the Black or Carrion-Crow and the Grey, Hooded or Royston Crow. True it is that each for the most part may be readily recognized from the other by its different coloration, that each has a different range and, to some extent, slightly different habits; but when we

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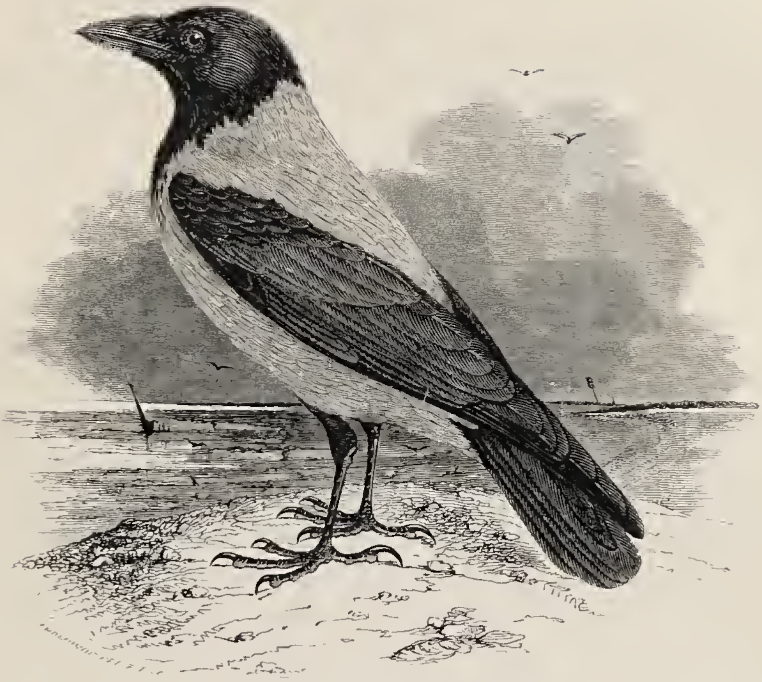
* Syst. Nat. Ed. 12, i. p. 155 (1766).



Corvus cornix, Linnæus*.

THE GREY CROW.

Corvus cornix.

find that, in the districts in which both occur, they breed together commonly and indiscriminately, that the offspring sometimes combine the characters of both parents, and sometimes favour one or the other of them, or that in the same brood all three phases appear, or again that the progeny of parents belonging to one form may present all the characteristics of the other, it seems almost impossible for a scientific naturalist to retain the time-honoured belief that the two forms are distinct species. Though the Editor utters this opinion with some diffidence, that diffidence chiefly

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[*] Syst. Nat. Ed. 12, i. p. 156 (1766).

rests upon its novelty in regard to British authorities*. The case, it must be owned, is one of a rare kind, and, though certainly not singular in ornithology, we have at present to go to India or the heart of North America to find its parallels†. Yet its rarity is no valid objection. If there be any degree of truth in the theories which have of late years been so prominently set forth, such cases must at one time or another have been countless; but to discuss those theories would here be out of place. All that is now required is to consider, with the utmost fairness, the peculiar characters of each form under every aspect—whether of structure, coloration, habits or distribution, and then to test their value in regard to the admitted fact of the frequent interbreeding of the two forms where they both occur, as well as to the indisputable results of that interbreeding. For this purpose it will be convenient to invert the order generally followed in the present work, and first to describe each form.

In the technical sense of the term not an atom of structural difference has been found between the Black and the Grey Crows. Taking in hand a typical specimen of each there is nought to distinguish them but colour. The Grey Crow varies in size as it varies in shade—examples from southern countries are smaller, and have their lighter plumage of a clearer tint, than those from the north; but as regards bulk the Black Crow varies in like manner, and in both the females are less than the males. The whole length of either form is from eighteen and a half to twenty inches; the wing, from the carpal joint to the tip, is from twelve to fourteen inches; the first primary is about three inches shorter than the second, which is an inch shorter than the third, and this is a little shorter than the fourth. The tail varies from seven to nearly eight inches and a half; the bill measures a trifle more than half an inch in height and from two to two inches and a quarter in length; the tarsus from a little over two to a little over two inches and a third.

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* The notion, however, has long prevailed in the mind or the imagination of some of those best fitted to exercise either. As an example, the excellent remarks on this subject of Mr. Hancock in his 'Birds of Northumberland and Durham' (pp. 32–36) may especially be cited.

† Instances more or less similar are found in the interbreeding of certain "species" of Himalayan Pheasants (*Gallophasis*—the *Euplocamus* of some authors), of Rollers (*Coracias indicus* and *C. affinis*) in India, and of the North-American Woodpeckers of the genus *Colaptes*.

In both forms the bill, legs and toes are black; but in the Grey Crow the claws are of a very dark horn-colour, while in the Black Crow they are pure black: the irides are in both of a dark greyish-brown. In the Black Crow the whole plumage is entirely black, glossed above with violet and green reflexions according to the light in which it is viewed. In the Grey Crow the nape, back, rump and lower parts of the body (except the black feathers covering the tibio-tarsal joint) are of a smoky-grey, the shafts of most of the feathers being dark slaty-grey or black, while all the rest of the plumage is precisely as in the Black Crow; but the exact extent of grey varies in some degree, as also does its shade, as before said. In both forms the young are distinguished by the want of lustre on their feathers.

Next as regards habits. If our view be limited by the confines of the United Kingdom, two discrepancies are manifest. First, that, while the Black Crow inhabits chiefly more or less wooded country, the Grey Crow frequents moorland tracts—both remarks referring to the breeding-season. But directly we cross to Holland we find the Black Crow nesting on the ground in open districts, while in Scandinavia the Grey Crow frequents localities of the same kind as those which the Black Crow affects with us. It seems not unreasonable, knowing that many of our treeless moors were once covered with forest, to suppose that when first occupied by the ancestors of the Grey Crows which now possess those places, they did not so much differ as at present from the woodland haunts of the Norwegian and Swedish birds. The Grey Crow readily adapts itself to circumstances. It builds its nest equally on the storm-swept cliffs of Shetland and on the palms of sunny Egypt. There is accordingly no wonder in its retaining its seat in Scotland or Ireland, though the trees which once sheltered its fore-fathers have long since been laid low.

The second discrepancy of habit which must be noticed is one that will weigh heavier with many naturalists, and yet it seems really to have but little significance. Throughout the greater part of the British Islands the Black Crow, where it occurs, is mostly a summer-visitant, while the Grey Crow, in England at least, is, as a rule, an autumnal immigrant, appearing regularly in the fall of the year, and disappearing as regularly in spring. But then we have to consider the general principle of migration. Whatsoever its cause may be and howsoever it may be effected, its process is undisputed. In the northern hemisphere as summer wanes all birds subject to its influence move in a generally southward direction. Now Crows, whether Black or Grey, notoriously belong to this category and shift their quarters accordingly. In Great Britain, and to a certain extent elsewhere, the Black Crow occupies a more southern range than the Grey Crow. This relative position is preserved irrespective of season. Each follows the sun towards the equator and each moves northwards as the sun returns towards the pole, so that both are impelled by precisely the same movement*. We know how with many kinds of birds our native stock emigrates more or less entirely towards autumn, and its place is taken by an influx of northern strangers. In some species the most practised eye can detect no difference between its indigenous and its foreign members; but in others such a difference is easily discerned. In the Crow the difference is wider perhaps than in any, but the difference is only of degree, it is quantitative and not qualitative. Hence, while the discrepancy affords us no proof that the Grey and Black Crows are specifically distinct, it furnishes no good ground for asserting that they are specifically identical.

In other respects the habits of the two forms defy differentiation. Their food, cries and mode of nidification, their rapacity, wariness and conduct generally are absolutely alike; and their geographical distribution, which offers many points of interest, alone remains to be considered. In the British Islands it may be said that the Black Crow breeds, if permitted by gamekeepers, more or less commonly throughout England and Wales, to the almost total exclusion of the Grey Crow—the instances in which the latter, unaided by the former, has been known to build its nest south of the border being very few in number*. Beyond this limit, however, the case is altered, and almost at once the Grey becomes the commoner form, for, though the Black Crow holds positions, apparently in the low-lying districts, even far to the northward†, its numbers bear no comparison with those of the other throughout Scotland generally, where both are almost universally called "Huddies"—a name corrupted from Hooded Crow, and therefore properly belonging to the parti-coloured birds—the whole-coloured birds being distinguished as Black Huddies. Indeed so much do the two forms intermingle that in many parts of the country the notion prevails that the difference in plumage is due to sex. So long ago as 1828 Fleming described the female of *Corvus*

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* This has been admirably put by Mr. Hancock (*ut suprà*).

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* The Editor learns from Mr. More that it is supposed to have done so in Devon, but its rarity in that county at any time casts suspicion on the story. Mr. Laver informed Dr. Bree that some used to breed every year near the Blackwater, in Essex; but it would seem that this is not so now. In Norfolk a pair is said by Hunt (Br. Orn. ii. p. 43, note) to have reared a brood in 1816 nea King's Lynn; what looked like a young bird was seen near Yarmouth in July, 1843 (Zool. p. 316), and others near Cromer in August, 1867 and 1877 (Zool. s.s. p. 1012, and 1877, p. 443). In Lincolnshire, Mr. Cordeaux shot a partly-fledged example August 5th, 1873 (Zool. s.s. p. 3685). It has been observed twice, or oftener, near Flamborough under circumstances which presume its breeding there (Zool. p. 6142, s.s. pp. 2728, 5081). Williamson declared (P. Z. S. 1836, p. 76) that it had bred on two or three occasions near Scarborough, but the only instances of which he gave details shew that one of the parties to the union was a Black Crow. It was also reported to Mr. More as breeding regularly in Cumberland, and occasionally in North Wales; but confirmation is needed in either case. That it does so, however, annually in the Isle of Man seems to be established.

† Mr. More obtained evidence of its breeding regularly in all the counties south of the Firths of Forth and Clyde, and northwards in those of Dumbarton, Argyle, Clackmannan, Perth, Aberdeen and Banff—occasionally also, it would seem, in Caithness and (if it has not been confounded with the Rook) in some of the Hebrides, but whether in all these localities it breeds unpaired with the Grey form, is open to doubt. St. John says that in Moray it is impossible to decide on the line which divides the two birds, though the Grey Crow is so much the commoner as to be the Crow of the country, and that he never saw there a pair of perfectly Black Crows (Nat. Hist. and Sport in Moray, p. 58).

cornix as "wanting the grey," while several Scottish observers on the other hand have considered grey feathers to be an unfailing characteristic of the hen.*

In Ireland the Grey Crow is common and resident, according to Thompson, in all quarters of the island, though in some parts its numbers seem to decrease in winter; but the Black form is comparatively rare, and on that account probably escaped the notice of the earlier writers who mentioned Irish birds—such as Payne, in 1589, and Moryson, in 1617, who deny its occurrence there,—Charles Smith, in 1750, being apparently the first to include it among those of the County Cork. It was known to Thompson as appearing in the north, east and west, as well as in Kilkenny and Tipperary, but details of its distribution are wholly wanting. Nor is evidence forthcoming of its breeding there, unless paired with the Grey Crow, of which there is a single case recorded in Antrim. Mr. Watters says that he had never met with the Black form in the eastern counties, and that the only examples he had ever seen were two, obtained in Clare in the summer of 1846, though he had heard of its occasional occurrence near Belfast, where indeed Thompson had already noticed it. Lord Clermont informs the Editor that one was trapped in May 1851 at Ravensdale Park—the sole instance to his knowledge of its appearance in that neighbourhood. All this testimony, taken with the silence of other observers, shews that the Black Crow is but an accidental visitor to Ireland.

Northward of the British Islands the Grey Crow is a common resident in the Færoes, and occasionally strays to Iceland, where also the Black Crow has been reported, but very doubtfully, though it perhaps sometimes reaches the Færoes. The latter is a rare visitant to Norway, and still more seldom to Sweden—in both kingdoms having only appeared in the south, while its occurrence in Finland is extremely dubious. On the other hand the Grey Crow is abundant in nearly every part of all three countries, and throughout the Russian dominions eastward to about the distance of two hundred versts from Krasnoiarsk. But the Black Crow also appears in certain districts of European Russia, extending from Archangel to the Black Sea, though not further in Western Siberia, according to Dr. Radde, than the eastern slopes of the Ural, until some two hundred versts beyond Tomsk, where curiously enough it reappears, at first in small numbers compared with the Grey Crow, but that decreases until, at about the same distance from the Jennisei, the Black Crow alone is found. The intermediate space, says Mr. Seebohm (Ibis, 1878, pp. 328, 329), is held in common by both forms in about equal proportions, but the number of mongrels between them is computed to be double that of either pure Black or pure Grey birds. Northwards the range of each form is about conterminous with the growth of the forests. Eastwards the Black Crow seems to dwell in the land continuously to the sea of Ochotsk and southwards in Mongolia. It also inhabits Japan. In Turkestan and thence to the Caucasus both forms appear, but then again *C. corone* has alone been found in Cashmere, while from Affghanistan to Asia Minor *C. cornix* seems only to occur. The latter also inhabits Syria and the south of Palestine, though it seems to be local in its distribution, but it is a well-known bird of Egypt and even appears in Nubia.

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* This divergence of opinion is probably due to the fact of the particular observer relying on insufficient evidence. Having once perhaps ascertained the sex of the grey or black partner of a pair, he imagines that all other cases must be similar; not knowing that a Black hen may mate with a Grey cock and *vice versâ*. Any doubt on the subject should be dispelled by St. John's statement (*op. cit.*) that he had killed Crows "in every shade of plumage from pure black to the perfectly marked" Hooded Crow, "and this without reference to age or sex."

In Algeria Loche says that the Black Crow commonly frequents the woodlands, while the Grey only appears occasionally, but he has possibly mistaken the small Raven (*C. tingitanus*) for the first, which is nevertheless recorded from Eastern Morocco, Madeira and the Cape Verd Islands. Major von Homeyer found its nest in Majorca (Journ. f. Orn. 1862, p. 252) and it is resident in Spain, breeding, though rarely, near Gibraltar; but the Grey Crow is of still rarer occurrence in the south of that country if indeed it appears there at all. In the south of France this last is also rare, and only found in winter, but it becomes more numerous towards the north till, in Normandy and Picardy, it is as abundant at that season as in any part of England. On the other hand the Black Crow is said to be resident throughout France, and in the south very plentiful in winter. In Belgium and Holland it is also resident and common. In Germany, the Elbe is stated to mark roughly the boundary of the breeding-limits of the two forms—the Black Crow occupying the districts to the westward and the Grey Crow those to the eastward of that river, but in Upper Lusatia, Anhalt, Brunswick (Journ. f. Orn. 1871, p. 212), and Mecklenburg both are found breeding; and in the duchy last named hybrids frequently occur, as they do also in Holstein. In Denmark, however, the Grey birds almost entirely prevail, the Black being very rare, and even in that part of Germany where the Black Crow breeds the Grey predominates in winter. In Savoy the Black form is common and resident, but the Grey is rare and does not breed. The latter however, says Dr. Salvadori, is common and resident throughout the whole of Italy and its islands, while he believes that the former is confined to Upper Italy and is wanting from Tuscany southwards, but further observations are hereon required. In Piedmont hybrids between the two occur. In the Austrian Dominions their distribution has not as yet been clearly defined, and with regard to some parts of it the evidence is to a certain extent conflicting, though the Grey Crow seems generally to pervade the whole. The Black Crow also occurs in Moravia and Bohemia, but in the last it is chiefly if not entirely confined to the wooded highlands of the west. In Austria proper it is very rare, though abundant in the Tyrol. In Styria it appears in winter, but it is not recorded by modern writers from Carinthia. It occurs, however, in Servia, Wallachia, Bulgaria and Macedonia, but its asserted existence in Greece must at present be regarded as doubtful—while the Grey Crow inhabits all these and the intervening countries, extends to most of the islands of the Greek Archipelago, and was found breeding in Crete by Col. Drummond-Hay.

Thus it will be seen that though our knowledge of the subject is still imperfect as regards a few minor details, it admits of our arriving at some important generalizations, and the result shews that the geographical distribution of the two forms supplies no better proof of their specific distinctness than does any of the other characteristics before considered. The Black Crow is found at the extreme western as at the extreme eastern limits of the range of both, while the Grey Crow occupies the most northern as well as the most southern countries frequented by either. It cannot therefore be said that one is a western and the other an eastern race, or that one is a northern and the other a southern. So far the only rational mode of regarding the Black and Grey Crows would appear to be as members of a single dimorphic species, and the inability to point out why this species should possess that admittedly exceptional quality is no more an argument against that view, than is the inability to explain why a wholly black plumage should prevail in nearly all the species of *Corvus*, while in a few others the black should be varied by grey or white. It must also be remembered that the present case does not stand as one of simple local variation as is that of so many other birds—some of them even belonging to the same genus, as the Daw, presently to be noticed, and the *C. splendens* of the Indian Region, of which Himalayan examples have an ash-coloured breast and collar, which is darker in specimens from Bengal and Southern India, and darker still in those from Ceylon (Ann. Nat. Hist. ser. 2, xiii. p. 214), while in some of those from Burma and Siam nearly all trace of the grey is lost (Ibis, 1867, p. 298)*.

A more important objection, however, to the view above taken may be raised, and one that has not before been stated. By many naturalists it has long been held that the infertility of hybrids between any two forms affords the strongest ground for considering them distinct species—whether the converse position be true or not. Now that hybrids of the Black and Grey Crows are fertile has been proved by several observers, and Mr. Seebohm has furnished (*loc. cit.*) additional evidence of the fact. But he has at the same time come to the conclusion that though this is the case in some instances it is not always so, and he bases his opinion on the circumstance that at one place in that part of Siberia which is tenanted in common by both forms he, in the breeding-season, shot all the Crows he could--thirteen of them being "thoroughbred" and fifteen hybrids. Of the latter seven were males and eight females, but the proportion of the sexes in the former was very different, being eleven males and two females. Hence he naturally supposes that most of the "thoroughbred" females were engaged in incubation and out of his reach, while the majority of hybrids were not, and for the reason that they were barren. Whether this reason be valid must be left to future determination, but if the tendency to infertility, which Mr. Seebohm believes himself to have observed, be finally established it must be allowed to have due weight upon this very curious question*.

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* Mr. Hume suggests (Stray Feathers, 1874, p. 480 and 1875, p. 144), that these deserve specific recognition. Mr. Sharpe notices (Cat. B. Br. Mus. iii. p. 33) a specimen, said to be from Malacca, of the ordinary dark form. When more is known about the dark-eyed and white-eyed Crows of Australia the case of our own birds may be further illustrated (*cf.* E. P. Ramsay, Ibis, 1865, p. 303).

Like the Raven, our Crows seem to pair for life, and, though some few pass the winter in or near their breeding-haunts, whither their presence may attract chance strangers of their kind, the greater number, including all the young birds, collect in flocks towards the end of summer in places where food is most abundant, and keeping more or less together gradually make their way southward until the turn of the season, when they retrace their flight in like manner. Gregarious as they thus are during the greater part of the year, they appear to associate less from the love of company than from the opportunities thereby afforded of performing their migrations in safety, or of getting their living with facility. In the breeding-season the flocks separate, and each pair of birds takes up a particular beat. This fact has led many English observers to think that the Black form—being as before remarked chiefly a summer-visitant to these islands, and consequently most usually seen in pairs or, after the young are flown, in small family-parties—was less sociable in its habits than the Grey, which being better known in this kingdom as a winter-guest, appears of course at that season most often in bands.* The comparative scarcity too of the Black form has encouraged this belief, for from its continued destruction by shepherds and gamekeepers throughout most parts of England, it is almost impossible for a sufficient number to be nowadays bred in this country to admit of the collection of any considerable flocks.† In the wilder and less frequented districts of Scotland and Ireland, the Grey Crow enjoys greater immunity, though there are in each wide tracts of country where it has been almost entirely extirpated, chiefly by the use of poison; but by far the larger portion of the birds of this form which are seen with us in winter are unquestionably of foreign origin,‡ reaching this country about October.

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* Some doubt however may be expressed as to whether all the birds deemed by Mr. Seebohm to be "thoroughbred," were really so, for it seems that hybrids of the two forms, as often as not, wholly resemble either one parent or the other, while an entirely Black bird has been seen in a brood of which both the parents were Grey (Verhandl. zool.-bot. Ver. Wien, 1854, p. 619).

Crows are not very early breeders, and it is generally the end of April or the beginning of May before the nest is prepared. This, as has been already said, is variously placed in trees, rocks, or on the ground, but one that has been used before is very commonly refurnished, and a favourite site is often tenanted for a long series of seasons, in which case the annual addition of fresh materials makes a structure of huge bulk. Sticks, heather, roots, turf, seaweed, bones—in short, almost anything that the birds can find and carry—are built into its foundation and outworks; but, however large these may be, the interior is always a cup lined with moss, wool, fur, hair and feathers, neatly interwoven and smooth, and of a size fitted to hold from four to six eggs, subsequently laid therein. These are in colour very like Ravens', but seldom have the markings so deep in shade—black for instance being almost wholly wanting—or so numerous: in size they measure from 2·07 to 1·5 by from 1·27 to 1·04 inch. It is well known of many birds that when one of a pair is killed, the survivor speedily obtains a new mate, who continues the work of reproduction. This has been repeatedly observed to be the case with Crows, from the fact, probably, that few species are more systematically slaughtered in the breeding-season.

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* The precise range of the Grey Crow in England has yet to be determined and well deserves attention. Mr. Knox says that though it is numerous in winter to the eastward of Shoreham, he never detected it on the Sussex coast to the west of Bognor. The Editor can state that it does not visit a district within sight, and not twenty miles to the westward, of the Royston Downs, whence it takes one of its commonest names.

† Yet in the strictly-preserved county of Norfolk, Mr. Norgate informs the Editor that he has known more than a dozen Crows' nests, the sites of which were visible from one single spot. It is, however, almost useless to remark that nearly all of them would be also known to the neighbouring gamekeepers, and that no increase of the species, but the contrary, would be the result.

‡ So well is this known along the eastern coast of England, where the birds may be seen arriving from over sea in autumn, that they are called Danish Crows. At the same season Black Crows, but in far smaller numbers, also appear on the coast and some of them seem to winter with us.

The food of the Crow is varied, but consists almost exclusively of animal matter, of which nothing that can be found comes amiss, from the carcase of a large quadruped to the grubs of insects. The heaps of refuse washed up on the sea-beach, and the shores of tidal rivers, as well as on lands that have been recently flooded, supply a great portion, and in such places the birds may be seen, often in considerable flocks, diligently seeking for anything eatable, each individual as intently watching the actions of its comrades as carrying on its own search, so that the discovery by one of booty larger than common is sure to be observed by the rest, who hasten to share the spoil, pieces of which are torn off and conveyed to a convenient station to be devoured. Bones and shelled animals, the marrow or soft parts of which cannot be readily extracted, are borne aloft to a considerable height and dropped upon rocks or stones that they may be broken, the bird following them very closely in their fall; but several observers have noticed that it often mistakes the nature of the ground beneath, and repeated trials are frequently needed to attain a successful performance of the cunning feat. It will also hover over the water and seize fishes or offal that may be near the surface. Were the Crow but content with food of this kind it would make few enemies; but unfortunately for itself it has earned a reputation of being only less mischievous as it is less powerful than the Raven, and, where it is plentiful, its injuriousness to flock-masters cannot be gainsaid. Yeaning ewes and their new-born lambs not unfrequently fall victims to its attacks when removed from the shepherd's care. The gamekeeper detests it even worse than the Raven, for it is more abundant, and its partiality to eggs, from those of an Eagle to those of a Titlark, leads it to beat deliberately over moors and fields, hedgerows and borders of woods, to find the nests of Grouse, Partridges and Pheasants, which it speedily empties of their contents, each egg being separately carried off on the point of its bill and then sucked. Nor does it shew any mercy to the tender broods, and from its habit of haunting the waterside it is particularly destructive to Ducklings. Leverets, young rabbits and other small mammals it will also capture. It will snatch a wounded bird almost from the grasp of the gunner, and that which at nightfall he has marked as fallen dead will be found by him next day with its bones picked clean. Though grain is seldom touched by it, when opportunity offers it will take cherries and walnuts. Thus by nearly all classes it is ranked as one of the most heinous of feathered offenders. Yet Waterton had a good word for it, urging that for nine or ten months of the year it does very little injury to man, while during the greater part of that time it is as assiduous as the Rook in the consumption of noxious larvæ. For this cause also, Vieillot reckons it among the birds that are useful, but notwithstanding these witnesses in its favour any attempt to plead the cause of the Crow in this country would be vain.

The sagacity of the Crow is as proverbial as that of the Raven, and in illustration of this quality a nearly endless number of anecdotes might be cited—some of venerable antiquity. Many no doubt rest on fancy, but men who have seen the bird's habit of dropping shell-fishes that they may be broken by the fall, have some excuse for fabling that it would fill a pitcher with stones to raise the level of the water it held. Its mode of hiding portions of food that cannot at the time be conveniently eaten naturally suggests an amount of forethought that can pardonably be exaggerated. In the same way any one who has listened to the strange sounds which a Crow will divert itself by uttering for half an hour together, or the various tones* in which it will call to and be answered by a distant comrade, can well understand how the faculty of intelligible speech came to be attributed to this bird. Indeed it is hardly possible for us to deny it the power of carrying on a conversation of some sort, for it is admitted that while most birds by their notes express alarm, pleasure and certain other feelings, none has a greater capacity for indicating different sensations (whatever they may be) by its articulations, and it is not surprising that the varied notes of the Crow have met with many attempts at interpretation on the part of the rural population of this country and others, some of them being highly humorous.†

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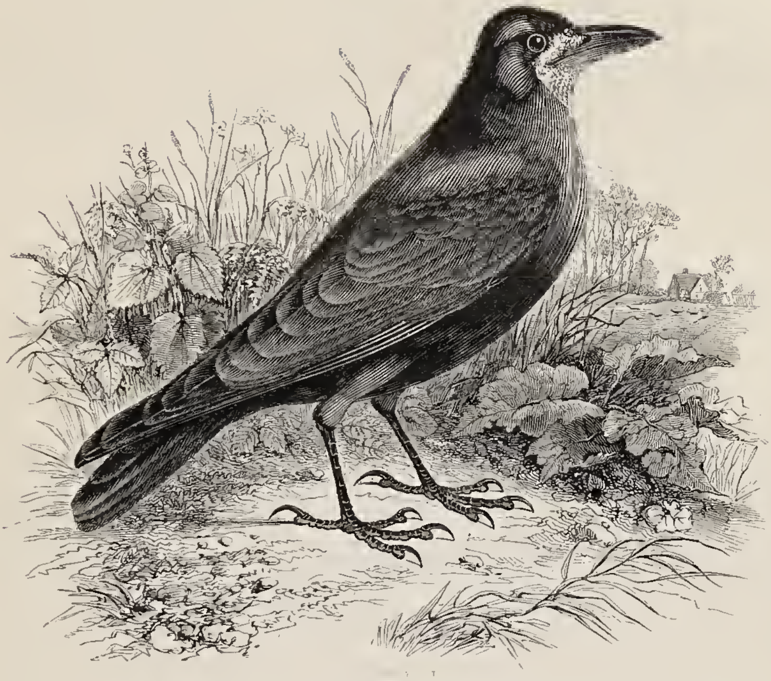
* Macgillivray professes to have recognized a difference in the voices of the two forms, but the Editor believes there is none, and herein his opinion is corroborated by Mr. Seebohm, whose testimony, from the opportunities he has enjoyed of hearing both almost simultaneously, is of great value.

† The Grey Crow is the subject of a monograph in Dutch by Dr. N. Meursinge.—'Verhandeling over de Bonte Kraai' (Groningen: 1851, 8vo, 332 pp.).



Corvus frugilegus, Linnæus[*].

THE ROOK.

Corvus frugilegus.

The Rook, as Pennant says, is the *Corvus* of Virgil[†], no other bird of this name being so eminently gregarious. The sociability of its disposition, however, is not confined to its seeking the company of its own kind and constantly living in flocks at all seasons of the year, but is further shewn by its apparent preference of the abodes of man, near which to establish itself; for it has been remarked that a rookery is seldom seen except in the immediate vicinity of houses, and it is also declared that instances are not wanting of an ancient settlement being deserted when the neighbouring dwelling has been pulled down, or even abandoned as a habitation.

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[*] Syst. Nat. Ed. 12, i. p. 156 (1766).

[†] It may be remarked that the district in which the poet was born and educated is, as will presently be shewn, almost the only part of Italy in which the Rook breeds.

This seeming partiality is carried to such an extent that Rooks' nests are occasionally found in various parts of the most crowded cities, and even in London itself, though here the extension of buildings in every direction, by widening the distance of the birds' feeding-ground, has lessened and will go on lessening their numbers. The large rookery that existed in the Temple Gardens and furnished Goldsmith with opportunities of observing its "policy" came to an end in the early part of this century*, and that in Carlton House Gardens in 1827, though its evicted owners are said to have removed to Spring Gardens. The rookery also in Doctors' Commons has ceased to exist, but that in Gray's Inn Garden still flourishes and is now the largest in London, containing about thirty nests. Until the year 1835, when the steeple of Bow Church was repaired, a pair had their nest between the wings of the dragon forming the vane at its top. Then they removed to a plane-tree near the corner of Wood Street and Cheapside, where they remained for some years, a second nest being also built in it in 1845. In 1838, a pair began a nest on the crown which surmounts the vane of St. Olave's, Crutched Friars. In the garden of Chesterfield House there was for many years a considerable rookery, containing about fifty nests in 1846, but this is now built over, though the adjoining garden of Wharncliffe House still harbours some ten nests. There are besides several other settlements of the species within the limits of London.† Mr. Blackwall recorded (Zool. Journ. v. p. 10) that for two years three

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[*] Mr. Harting has kindly pointed out that in an anonymous 'History of Epsom' this rookery is said (p. 130) to have originated in birds taken from Woodcote Green in Surrey by Sir William Northey, and to have existed in 1825. Rennie however wrote of it in 1831 (Archit. B. p. 220) as being "long abandoned".

[†] Thus Dr. Hamilton mentions (Zool. 1878, pp. 194–196) rookeries at Holland House, in Kensington Gardens, Hyde Park, Hereford Square, Marylebone Road, Gower Street and Gordon Place. In 1831, says Rennie, there was a rookery at the back of Whitehall; according to Jennings (Ornithologia, p. 75) there was one for many years in the churchyard of St. Dunstan's-in-the-East; and Mr. Harting says that in 1876 there was a nest in Bermondsey churchyard.

pairs built on some poplars in a central part of Manchester, and Bewick noticed a nest on the vane of the Exchange, in Newcastle-upon-Tyne, which was tenanted for ten successive seasons till the spire was taken down; while Macgillivray speaks of several small rookeries in the heart of Edinburgh.*

Rooks are often credited with a peculiar degree of sagacity in selecting or avoiding certain trees, and it has been more than once asserted that any which have been marked in the usual way for felling are abandoned by the birds; but stronger evidence is required before the naturalist can accept this as the sole warning upon which they have acted. There may be better grounds for supposing that they leave trees the insecurity of which is proved by subsequent storms. The Author is inclined in these cases to think that the age, or incipient decay of the trees, had affected the upper branches, and that the Rooks found them less fit for their purpose than those of more healthy trees which were close by. Other kinds of knowledge are also ascribed to Rooks. They are commonly believed to forecast the weather; and to strengthen their nests against a coming gale of wind, while several stories profess to shew their yet more marvellous acquaintance with human affairs, manifested by a change of abode, on the death or arrival of a proprietor who has disturbed or favoured their interests—some of these tales being supported by a curious coincidence of events.†

The balance between injury or benefit derived from Rooks by agriculturists is a question which general opinion seems to have settled by considering that the damage, though often great, is much more than outweighed by the services rendered in the destruction of millions of grubs of the cockchafer, chovy, the several species of wireworm, and the larvæ of crane-flies, commonly called harry-long-legs; these, and many others equally injurious to vegetation, are eagerly sought and devoured, forming a very large proportion of the food of this most numerous species. Early in the morning Rooks visit meadows while the grass is yet wet with dew to break their fast on worms and slugs. Later in the day they may be seen, either searching newly-ploughed land for the various insects there exposed, or again visiting pastures for other purposes. They have been accused of destroying the grass by pulling it up by the roots; but this is an error. The tufts of grass or other plants, so often found withered on the surface, have already been destroyed by the grubs which live in the soil having eaten into their roots, as is evident on examination. The plants retain their position in the ground and for some time their verdure, but are quite loose and can be removed almost by a touch. The Rooks merely pull them up in the act of getting at the authors of the mischief. The grass that is uninjured is left growing. In what way the birds first detect the presence of grubs in the ground is not known to us. Some think by actual experiment: others by the altered appearance of the plant; but the result is certain: large patches of a pasture are often thus probed, and, though the damage already done be considerable, further injury, especially that which would follow from the grubs attaining maturity and propagating their kind, is completely prevented.* The utility of Rooks on other occasions has also been declared. Many years ago, it is said (Mag. Nat. Hist. vi. p. 143), a flight of locusts visited Craven, and their numbers created considerable alarm among the farmers of the district. The Rooks, however, flocked in from all sides by thousands and devoured the insects so greedily that they were all destroyed in a short time. It is also stated (*loc. cit.*) that, about 1830, there was such an enormous quantity of caterpillars upon Skiddaw, that they devoured all the vegetation on the mountain, and people feared they would attack the crops in the enclosed lands; but the Rooks, having discovered them, in a very short time put a stop to their ravages.

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* An instance of Rooks building in cliffs is given by De Montbeillard, and their occupying for many years the church of Walbourn in Lincolnshire is noticed by Erasmus Darwin (Zoonomia, Ed. 3, i. p. 247). Mr. G. Norman mentions (Zool. p. 1366) two nests on housetops at Kingston-on-Hull in 1846, and Mr. Stevenson (Zool. s.s. p. 1910) a nest attempted to be built in 1869 on the church at Swaffham in Norfolk.

† The particulars of two such coincidences have been kindly communicated to the Editor, through Mr. Knox, by Lord Home. In 1824 the late Lord Home was desirous of destroying a rookery near Coldstream, and, after three years, effected his purpose. During the remainder of his life not a single Rook's nest was built on the property, but in 1842, the first spring after his death, the birds returned, not indeed to their former haunts, but to some old trees within a mile of the place. A similar thing happened at Douglas Castle. The Rooks had been driven away in 1841. In 1857 the present Lord Home went to live there, and in the following year they returned to their old quarters.

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* The Rook however is not the only bird which confers this benefit. Partridges destroy a vast number of grass-eating grubs.

A very different opinion once prevailed. In 1532 an Act of Parliament (24 Hen. VIII. c. x.) enjoined all persons to kill and utterly destroy all manner of Choughs, Crows and Rooks*, and declared that the inhabitants of every place containing at least ten households should at their own cost provide a net† which was to be set at all convenient times at a "shrape"‡, made with chaff and other things fit for that purpose for the destruction of these birds, and kept in repair for ten years under penalty of 10*s.*, a reward of twopence a dozen being given for old birds. Bishop Stanley quotes an entry among certain presentments concerning Alderley in Cheshire in 1598:—"We find that there is no Crow-nett in the parish, a payne that one be bought by the charge of the parish"; and doubtless many other such records exist.

In Scotland, legal persecution began still earlier, and an Act passed in 1424, followed by another in 1457, forfeited to the king all trees whereon Rooks were suffered to build their nests, should the nests be left at Beltane (May-day). In Ireland, the statute of 17 Geo. II. c. x. offered a reward for the head of any of the Crow-tribe.

The attempts made by man to interfere directly with the balance of Nature are seldom profitable, and it is said that wherever Rooks or other birds of the kind have been effectually destroyed, the result has shewn that the proceeding was a mistake, and that agriculturists to save their crops were compelled to reinstate the birds they had exterminated.* Yet the experience thus gained is usually lost on all save those immediately concerned in the affair, and accordingly every now and then in some place or other, but mostly in Scotland, agitation on the subject prevails.† This occasionally leads to a more or less general persecution being ordered and for a time carried on, but it frequently happens that the landlord is better advised than his tenants, and after the first outbreak of discontent his influence contrives that their destructive efforts shall gradually cease.

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* The vague meaning of "Chough" has been already mentioned (page 253, note). "Crow" and "Rook" are in common speech even now interchangeable, witness Mr. Tennyson's "many-winter'd crow that leads the clanging rookery home."

† The Crow-net is figured and described in Willughby's 'Ornithology', but not very clearly. It "may be placed near any Barn-door where Corn is winnowed, or in a Corn-stubble, or on the Greensword in the Morning and Evening haunts of any Birds where they gather Worms. Where-ever placed it must be carefully hid and concealed, as much as may be, from the view of the Birds, as if near a Barn-door by casting Chaff upon it, &c."

‡ "Shrape" signifies a place scraped, and so prepared for the catching of birds which was apparently carried on in time of snow.

The food of the Rook, as already shewn, consists principally of worms and insects‡, which, from the numbers of the birds, are consumed to an enormous extent. But its diet is extremely varied, and almost any other kind of animal matter, even carrion, fishes and small birds and mammals are acceptable, besides many vegetable products. Newly-sown grain§ until it has sprouted well above the ground requires watching, and ripe corn, especially if laid by the wind or when cut and in sheaves, sometimes suffers severely from the depredations of this bird. Perhaps however the potato-crop is that which is commonly most injured by it, unless care be taken to drive off the marauders both in the planting-season and when the tubers are mature. Acorns, beechmast and berries also contribute to the Rook's support, and when opportunity offers fruits, especially cherries and walnuts, are often taken, as are fir-cones for the larvæ they contain. In hard frosts it will attack turnips, but its object seems to be as much the grubs by which they are frequently infested as the plants themselves. Much has been said of its egg-stealing propensity, which indeed cannot be denied, but it seems to be chiefly indulged in during droughts, when the scanty herbage leaves exposed the nests of many birds that breed on the ground; and it is certain that, if Rooks were half so destructive to game as many people think, hardly a covey of Partridges would be hatched. Among the minor supplies of the Rook may be mentioned the caterpillars which occasionally infest the foliage of oaks, the galls (Zool. s.s. p. 3628) formed beneath the leaves of the same trees, and, as Mr. Knox informs the Editor, may-flies drifted by the wind to a river-bank.

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* Though reference to instances of this kind is made by many writers, the Editor is unable to find any document in which the details of a single case are satisfactorily given: the nearest approach to one is perhaps Mr. C. J. Cox's note (Zool. p. 8953).

† Such a movement was excited in the South-west of Scotland in 1838, but it seems to have been allayed by the late Sir J. Stuart-Menteath by a pamphlet entitled 'Farmers *v.* Rooks' which the Editor however has not seen. He has been more fortunate, thanks to Mr. Harvie Brown, in regard to a correspondence which arose in 1844 between Mr. Hog of Newliston and his tenantry. In the former controversy Selby, and in the latter Waterton, took part.

‡ *Melolontha solstitialis*, *Phyllopertha horticola*, several species of *Agriotes*, *Agrotis segetum* and *A. exclamationis*, and *Tipula oleracea* may be specially named.

§ Yet there is much truth in Jesse's remark that when the ploughman and the sower are at work in the same field, the former will be followed by a train of Rooks, while the latter will be unattended, and his grain remain untouched. However the castings of Rooks, found under the trees they frequent, prove by the husks they contain that these birds do eat corn, and sometimes a good deal of it.

The Rook chiefly inhabits wooded and cultivated districts. In autumn the rookery is generally frequented for some days by the birds belonging to it, and they are seen sitting on or about the old nests, occasionally carrying sticks, as though intent on breeding, while hardly a year passes but, in one part of the country or another, matters proceed so far that eggs are laid and hatched at that season. According to Jesse, the unpublished papers of Gilbert White mention a nest with young in it on Nov. 26th. Sir C. Anderson wrote the Author word that in 1817 a pair of Rooks had a nest with eggs at Lea near Gainsborough in the same month, and like information was received from Mr. Rodd as regards Cornwall in 1836. So many similar cases have since been recorded that enumeration of them is needless. It seems a mistake to term them, as is often done, instances of late breeding: they should rather be considered premature, since the breeding-season must be held to be ended by the annual moult, which takes place in July. Very early in the year, sometimes in January, but oftener in the next month, the birds return to their nests, which are usually placed in the tops of tall trees*, half a dozen or more being frequently built on the same tree†, but for a few weeks little is done beyond completing the noisy ceremonies of courtship and taking possession of sites. About the second week in March, the work of repairing, building and furnishing is begun in earnest, and is carried on amid bursts of uproar that at times arise from various causes, but chiefly from attempts made by the birds to rob one another of materials; notwithstanding that while a nest is in progress, one of the proprietors nearly always remains at home to guard it, the other fetching whatever may be next wanted for the structure. It has been repeatedly noticed, that when a pair of Rooks attempt to build in a tree previously unoccupied, and at a distance from the main body, the rest often destroy the nest; but the motive which prompts these and other curious acts observable in the habits of the community cannot be safely interpreted. The Rook's nest is about two feet in external diameter, and is formed of sticks and twigs lined with straws, grass and fibrous roots, as well as wool and other soft materials. The eggs, from four to six in number, are quite indistinguishable from Crows', though perhaps generally rather smaller.

During incubation, the loud disturbances that had hitherto from time to time prevailed almost wholly cease, and comparative quiet reigns in the rookery. The male feeds the female constantly, and occasionally takes her place on the eggs. Both birds labour incessantly to collect food for their young when hatched, and may be seen early and late conveying it with distended mouth, for the dilatable skin under the tongue, common to most Passerine birds, is in this species, from being bare of feathers and of a whitish colour, rendered particularly conspicuous. The young are fledged about the middle of May, and then leave the nest for the nearest branches, on which they sit, occasionally trying their powers in short trips from bough to bough. About the end of that month or the beginning of June, they are able to follow their parents to the fields, where they are still fed for a time, but soon learn to get their own living. The nest-trees are then in most cases deserted for some time, and all the members of the rookery roost together night after night in any convenient wood, whence at an early hour they repair in flocks to their feeding-grounds. As the day draws on the birds break up into smaller parties and range widely in their ceaseless search for victual. Whenever the main body are feeding, or otherwise engaged on the ground, two or three individuals are generally seen posted, like sentinels, in trees close by, whose note of caution or alarm is perfectly understood by the rest, and surprise is thereby avoided. Towards evening the scattered bands gradually collect in some particular spot, until the whole body is once more united. Those that have fared the best arrive earliest at the meeting-place, which may be an open field or a clump of high trees, and are joined by the rest according to the success they have found. All sit gravely, and but little noise is heard as they assemble. Shortly before sunset some signs of impatience are shewn, and an occasional movement is made by a few restless birds who sweep round over the others and alight in a new position. Suddenly a loud rush of wings announces the general rising, and off goes the entire multitude with slow and measured flight on their return homewards. Mostly silent hitherto or only by chance uttering a note, as the birds near the roosting-place all find their voices, and reaching it, the air is filled with the tumult of sounds that bursts from so many throats, the Daws that have been their almost constant companions during the day adding their share to the babel. Then occasionally follows one of the strangest sights that an observer can witness. Mounted to a very great height the Rooks will suddenly let themselves drop headlong, twisting as they fall, to within a few feet of the trees or of the ground, when they recover themselves and glide onwards. One after another, as though they had all gone mad, they precipitate themselves in this wonderful way, some of them wheeling round and rising again to perform the feat a second time. The indulgence of this very curious habit is commonly held to portend wind, but the belief, like that in many other supposed prognostications of the weather by birds, is probably erroneous. The motive however which urges the Rooks is wholly unknown, and all that can be reasonably concluded is that they delight in this performance.* Most usually they content themselves by soaring and circling over the trees for a short time and then perching, but this last is not accomplished quietly or quickly, and it is generally dusk before all have found a place, while after nightfall, especially when the moon is shining, belated foraging parties come trooping in, and their arrival always produces a certain amount of disturbance.

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* Instances however are not wanting of lower sites being chosen, especially where high trees are scarce. Mr. Stevenson mentions nests in laurustinus bushes and in a dwarf ilex. Mr. Cordeaux has known them in pollard willows, on an apple-tree not more than seven feet from the ground and in a rough hedge. At Dunipace, in 1878, according to Mr. Harvie Brown, some birds bred in low holly-bushes, and a nest is recorded (Zool. p. 9626) which was built on the ground.

† In some cases the number is far greater and the clusters present an extraordinary appearance. Macgillivray mentions three trees in one rookery that bore respectively twenty-six, twenty-five and twenty-three nests. In the 'Monthly Magazine' (xxvii. p. 304) for April 1809 it is said that a single ash-tree, then recently blown down, at Barton-on-Humber used to bear on an average one hundred nests, constituting the entire rookery.

Besides the Rooks which stop with us all the year, this country certainly receives in autumn the visits of some foreigners, and it is hardly to be doubted that a portion of our natives emigrate at the same season, and join the large bands that in winter repair to the south of Europe. The number of those that leave us, which by the analogy of other species we may infer are mainly birds of the year, is perhaps not very large, for the general practice of shooting the "branchers"—as the young on quitting the nest are called—in May and June greatly reduces the surplus population, the amount of which, equally with the supply of food, controls the tendency to emigration. In long-continued frosts Rooks suffer severely and are often put to the last shift to preserve life. Foggy weather also, as Mr. J. B. Lawes, in an obliging communication, has reminded the Editor, suspends their usual operations, and they will then sit for hours, moping and disconsolate, on or near their roosting-places, waiting for the air to clear, for they have apparently only the sense of sight to guide them to their distant feeding-grounds. The speed, however, with which space can be traversed when occasion needs is only to be appreciated by persons who have witnessed a flock of these birds escaping from a Falcon.

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* Waterton explains it as being merely the shortest way of effecting a descent from the great height the birds have reached, but this can hardly be so since they constantly return at the same elevation while the performance is gone through comparatively seldom, and the fact that some of the birds having just executed the movement will take the trouble of again mounting aloft and repeating it testifies to its voluntary nature.

Rooks, though less docile than most of the Crow-tribe, can be tamed, and becoming attached to their owners will learn many amusing tricks, that of imitating a variety of cries and sounds among the rest. The ordinary note of the Rook needs no description since it has given a word to the English language, but according to the coincident action or to the season of the year it has many modulations,* and the soft crooning of the bird that is fondling its mate or feeding its young is as different from the loud caw of the same when mixing in the public life of the community as sounds proceeding from one mouth well can be. Young Rooks, taken from the nest, it may be remarked, should be fed chiefly or wholly on animal food. Though they will readily eat many vegetable products they cannot be reared on such diet. New rookeries have been several times successfully formed by placing Rooks' eggs in the nests of Daws, who make excellent foster-parents. The young birds will then generally establish themselves in or near the place of their birth if it be at all suitable to their requirements.

A large volume might easily be written on this species, but even then its habits could be hardly described in full. Each rookery seems to have some custom peculiarly its own. In one the birds will roost in the nest-trees all the year, in another they will seek their night-quarters at a great distance, only visiting the rookery at certain seasons. In one case the members of a rookery seem always to keep together, in another they will disperse, forming two or more bands which feed and roost widely apart, only meeting in the breeding-season at their common tenement; while again, it is not very rare for all the Rooks of the district, belonging to many distinct settlements, to collect in autumn and pass the winter in one grand convention. But besides these more obvious differences, some of which doubtless depend on the capabilities of the locality, many others may easily be observed. In one rookery trees of several kinds will be used alike, in another the nests are strictly confined to those of the same species, or even to such of them as have the same habit of growth; and so on with regard to minor details far too numerous to mention in a work like the present. A good monograph of the Rook could not fail to be as interesting as its compilation would be laborious.

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* Rooks, as Gilbert White says, "in the breeding season, attempt sometimes in the gaiety of their hearts to sing, but with no great success."

This bird is probably nowhere more common than in England, Ireland and the south of Scotland; but decreases in numbers towards the north, though of late it has established itself in places where it was, as Mr. R. Gray remarks, before only known as an uncertain autumn-visitant. Thus a large rookery at Dunvegan in Skye, the most western Scottish breeding-station, was only established a few years before 1870. In 1864 its first settlements were formed in the western part of Ross and Cromarty, and, according to Mr. Harvie Brown's information to the Editor, a year or two after in West Sutherland. In the Outer Hebrides it is only known as an occasional straggler, though sometimes in large flocks, from the mainland in winter, and its appearance in Orkney, Shetland and the Færoes is of the same kind.* From what Jonas Hallgrimsson says of certain birds of the genus which have at times visited Iceland, they must have been Rooks, but the species has not been absolutely determined there. In Norway it occurs most irregularly, large flocks sometimes appearing chiefly in the south and in autumn or winter, but some of them stopping to breed. It seems to have been shot in Helgeland on the west coast, and Herr Collett has recorded one killed in spring on the Pasvig in East Finmark, a locality that it may have reached from the interior, for Wolley observed it at least once at Muonioniska at that season, and it has been seen in summer and known to winter at Quickjock; but in Sweden, where it is generally a summer-visitant, it is almost entirely confined to the south and to the islands of Œland and Gottland. In Finland it is of irregular occurrence, and whether it breeds in that country is unknown. In most parts of Russia it is very common and it reaches Archangel, where it breeds, not in large numbers however. Further to the eastward its range is not so northerly, but it extends to the Upper Irtish and the Ob, though it is not recorded from elsewhere in Siberia. It is found breeding throughout Turkestan, and in winter visits Affghanistan, Cashmere and the Punjab. It inhabits Persia to the north of Ispahan, and Major St. John noticed a considerable rookery at Casbin. It appears in the Caucasus and in winter in Palestine, congregating, says Canon Tristram, in large numbers about the Mosque of Omar in Jerusalem. At the same season it visits Egypt, but, according to Capt. Shelley, is not found above Memphis. In Algeria its appearance is accidental, and it is unknown to Col. Irby from Morocco. Throughout the south of Europe and the islands of the Mediterranean it is a winter-visitant, examples observed there being mostly young birds of the year. The southern limits of its breeding-range are not at all clearly known; but in Italy, Lombardy, Venetia and the country about Modena alone fall within them. In no part of Spain, not even the north, as Gallicia, is it otherwise than a winter-visitant. In France the line of demarcation has not been drawn, for while breeding commonly in the north it is but an immigrant in the south. In Southern Germany (Baden, Wurtemberg and Bavaria) it is chiefly known as a winter-bird, but a few breed in some places, as is also the case in Carinthia, but not in Styria. It is recorded as breeding in Bohemia and Galizia, and plentifully in the Crimea.

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* An example is said (Zool. s.s. p. 455) to have been taken at sea 200 miles from the north of Scotland.

Coming nearer home, it is very numerous in Belgium, and would be so, according to Mr. Labouchere, but for the persecution it suffers, in Holland. In Denmark it is a summer-visitant, and throughout Northern Germany it is more or less abundant though its settlements are often wide apart.

The anterior part of the beak is black; in the adult its base, the forehead, lores, chin and throat are bare, the skin being scabrous, and whitish-grey: the irides dark-brown: the whole plumage black, richly glossed with purple on the upper parts, but particularly on the head and neck, the feathers of which are soft and decomposed, while none are pointed; the lower surface of the wing- and tail-quills shining dark greyish-black: legs, toes and claws, black.

The Rook varies considerably in size, the whole length of a male being from eighteen to twenty-one inches: that here described being nineteen inches and a half; from the carpal joint to the tip of the longest primary, twelve inches and a quarter; the first primary three inches shorter than the second; the second an inch shorter than the fourth, which is as much longer than the third as that is than the fifth.

The female is frequently, in her whole length, two inches shorter than the male, and her plumage is less brilliant.

Young birds of the year resemble the adult; but their plumage has little gloss, and the base of the beak, the face and throat are feathered until the first moult, after which they generally become bare, though examples, especially if kept in confinement, sometimes retain the clothing of these parts for a year or more.

White and other varieties of the Rook occur as often as of most other species. Such as arise simply from want of colour, due probably to defective secretions which are often supplied as the bird gains constitutional strength, need not be here noticed; but some examples occasionally appear which seem to claim more attention. Hunt mentions (Br. Orn. ii. p. 39) one "of a light ash-colour, most beautifully mottled all over with black, and the quill and tail feathers elegantly barred." Examples with light spots at the end of the feathers have been noticed by Mr. Jenyns and others. Mr. Hancock figures such a specimen, in which "the whole of the plumage is black, each feather having a greyish bar close to the extremity; on the under parts of the body the bars are narrow, but on the upper parts they are wide and very conspicuous; the quills are likewise found marked in the same manner, and the tail feathers show slight indications of similar bars. The marking is quite symmetrical, and suggests the appearance of the spotting of the first or nest plumage so general in the *Passeres*." This gentleman says he has seen two more specimens of this interesting variety, and others are known to the Editor. They are all nestlings, and the bird mentioned by Hunt, being kept in confinement, lost all its mottled feathers at its first moult and assumed the ordinary black plumage. The hint thrown out by Mr. Hancock seems to supply an explanation of this aberration, which may perhaps be regarded as an example of what many naturalists term "Reversion"—that is, a tendency occasionally exhibited in a species to return to what was in all likelihood the appearance of a remote ancestor.

Malformations of the beak are by no means uncommon among birds, and in the present species a monstrous growth of the horny covering (as figured on the next page) has been frequently noticed, the more so since it has been supposed to bear on a question for a long time discussed and not yet entirely set at rest.

This question is whether the nudity of the adult Rook's face is produced by the abrasion of the feathers through the constant act of digging in the ground for food, or whether it arises as a natural peculiarity. Waterton, Mr. Blackwall, Mr. Knox and others have made a few trials, which from their inconclusive nature are hardly to be termed experiments, of keeping young Rooks in confinement to find whether, when the birds have no opportunity of digging, the feathers at the base of the beak will yet fall off. This it seems they will do, but not always, and all that appears to have been proved is that captivity in some cases retards this external sign of maturity as it retards many others in many other birds. At the same time it must be stated that Rooks with feathered faces are not unfrequently found living at large; but all such are most likely birds of the year, which from some constitutional cause have not yet divested themselves of this mark of nonage. Though one of the mandibles is sometimes prolonged to nearly twice its normal length, or both are so curved as to render the beak quite useless as a digging implement, few people have seen a Rook shewing overgrowth that had not a bare face; but, say the advocates of the abrasion-theory, it is possible that the nudity had been produced before the alteration of form had taken place, and that the bulbs whence the feathers arise, having been once injured, might afterwards remain unproductive.

Japan, China and possibly Eastern Siberia are inhabited by a Rook, *Corvus pastinator,* differing from our own in having the throat always feathered and a few other slight characters.*

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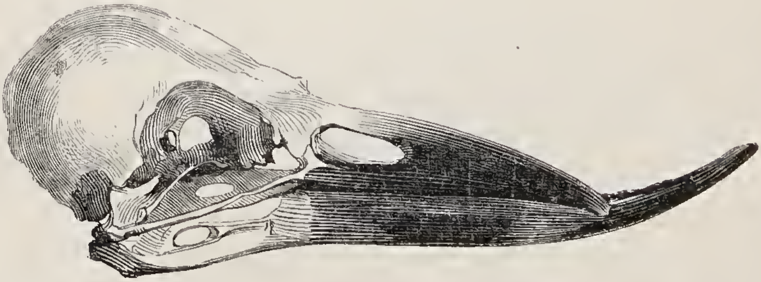
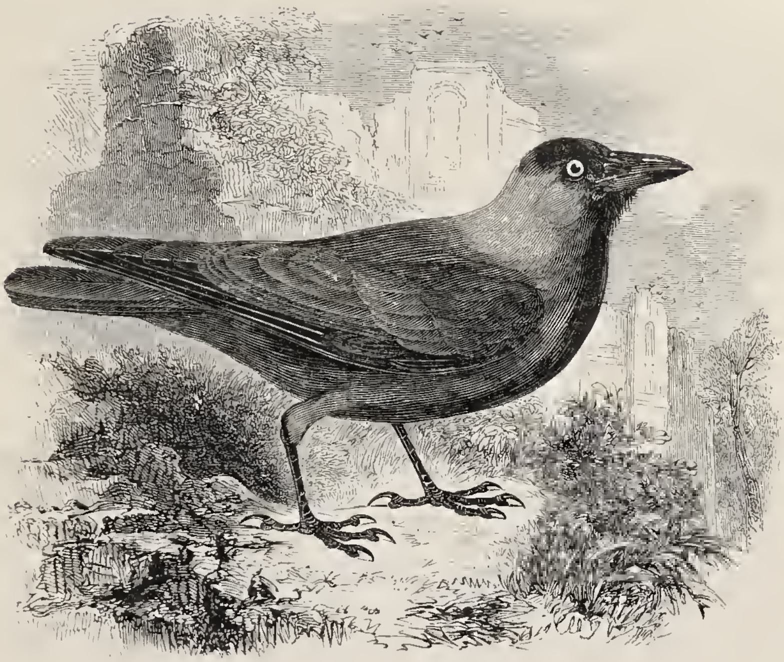
* Some ornithologists have broken up the genus *Corvus* still further than was done when the Pies, Jays and a few other natural groups were removed from it; but as regards its European members with no great success. Thus the Raven being left as the type-species, the Crow, Rook and Daw have been placed in genera respectively called *Corone*, *Trypanocorax* and *Colœus*—all the invention of Kaup, the first and last in 1829, and the second, of which Bonaparte had prior notice (Consp. Av. i. p. 384), in a communication to the meeting of the German Ornithologists' Society at Gotha (Journ. für Orn. 1854, p. lv. note).

Linnæus has been blamed by some writers for giving the present species a trivial name so misleading as *frugilegus*. It may be remarked that herein he only acted according to his well-known principles, preserving the name by which it was almost universally known, and still surviving, according to some, in the French *Freux*, though M. Littré derives this from the Teutonic *Hruoch*, the source of our own *Rook*.





Corvus monedula, Linnæus*.

THE DAW.

Corvus monedula.

Daws, in some of their habits, much resemble Rooks, with which they very commonly associate in considerable numbers throughout the year, and whether seeking food, or rearing their young, perfect harmony prevails between the two species. But in other respects there is a good deal of difference. Daws are not so entirely limited to wooded and cultivated districts, constantly frequenting also high cliffs, both on the sea-coast and inland where their larger congeners are rarely or never seen, and are even bolder and more domestic than Rooks, when taking up their abode near villages and towns. A large number seek shelter in our buildings, where, notwithstanding their pertness and certain mischievous propensities, their cheerful air and active movements often render them favourites. The confidence they so freely shew in mixing with the human community makes them looked upon almost as members of it, and, like some other birds that attach themselves to man, they have gained a familiar name, the particular form of which has doubtless been prompted by the reiterated call-note of their young, closely resembling the word "jack" as pronounced in many English dialects.* Nearly every cathedral and castle, ruined or not, is more or less beset by a host of Jackdaws, and there is hardly a church offering a secure retreat wherein they do not find a lodging. They have utilized Stonehenge, building their nests, as Gilbert White first observed, in the interstices of its prodigious blocks, and they frequently possess themselves of crannies in the face of a chalk-pit or quarry. If the dwellings we inhabit do not commonly harbour them it is only because convenient recesses are there wanting; but they often take advantage of chimneys which to the householder's annoyance are occasionally found stopped up by the quantity of sticks they bring together. Away from man's works they occupy holes and cavities in rocks, as well as hollow trees, and these must be deemed their most natural breeding-places, for though they will find quarters under cover of the accumulated masses of nests in a rookery, and, failing other shelter, will make rabbit-burrows serve their purpose, the instances in which they will build or occupy a nest open to the sky are very few in number.† Their persistence in collecting sticks with which to construct the nest is one of their most curious characteristics, but at the same time, as Jardine remarks, they often display a great want of instinct, for they will continue to drop the sticks down a wide hole, where perhaps not one will remain, until a huge heap is formed beneath. Waterton even goes further than this, and asks why they should use sticks at all in a hole which is already fit to support every kind of material proper for a nest? There is much point in this question, for few birds that ordinarily build in holes are at the pains of carrying thither the rough stuff that forms the foundation or outworks of the nest, so necessary where the structure rests on the boughs of trees, but so useless when a firm base already exists. But this is not all, for in conveying these sticks* to their destination Daws shew a singular lack of ingenuity. They may carefully balance each stick in the beak for convenient transport to the hole, but the stick is held by the middle and carried crossways, so that arrived at the entrance its length and rigidity often hinder its introduction, for they do not perceive that to effect this it should be turned endways, and they may be seen for a quarter of an hour vainly attempting an impossibility until the stick slips from their grasp, and another is fetched probably to be let go in like manner. Yet all Daws are not equally stupid, and Wolley observed (Zool. p. 1774) that in a large settlement at Bearwood the nests were curiously adapted to circumstances, some consisting only of a little wool, while others had a monstrous pile of sticks to stop any inconvenient cavity of the tree.† The quantity amassed is indeed occasionally wonderful. Sir C. Anderson informed the Author of a nest in a spiral staircase at Saundby Church in Nottinghamshire, which was composed of sticks piled up to the height of five or six of the narrow steps so as to reach a landing-place. Jesse has described and figured (Scenes and Tales of Country Life, p. 57 and frontispiece) a similar but larger nest, built, in seventeen days, in the bell-tower of Eton College Chapel, and forming a solid pillar ten feet in height.* Mr. Gunn recorded (Zool. s.s. p. 1847) another nest of this kind in Hillington Church in Norfolk, completely blocking up the tower-stairs by a substantial mass, some twelve feet in height and a cartload in bulk, which had been completed in about three weeks. Lord Clermont has kindly communicated to the Editor an account of a structure as wonderful, built between the 5th and 10th of April, 1868, in the church at Tonesborough in the county Armagh, the arch in which the bell hung being filled to half its height with the sticks of a nest which surrounded the bell so that it could not be rung until the curious obstruction was removed. In almost every case the nest is lined with wool, straw or other soft materials, among which shavings and horsedung must be par-

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* Syst. Nat. Ed. 12, i. p. 156 (1766).

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* "Daw" also is obviously a case of onomatopœia.

† Besides a case reported to Mr. Morris by Mr. G. B. Clarke, the only recorded instances to which reference can here be made are those by Messrs. Hepburn, H. T. Frere and Alston (Zool. pp. 185, 823 and 9572), and of them the second only is quite satisfactory. In this case the nest was about thirty feet from the ground, close to the bole of a silver-fir, composed of twigs and about a foot thick.

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* The collecting of these sticks is, as may be imagined, a toilsome task, and the birds are not slow to avail themselves of any they can get, as gardeners often find to their cost, for the pegs used to mark their plants are frequently carried off by Daws. Denson has recounted (Mag. Nat. Hist. ser. 1, vi. p. 397) how, from 1815 to 1818, the old Botanic Garden at Cambridge, situated in the middle of the town and now the site of the Museums and Lecture Rooms, was thus regularly robbed of its labels, which were subsequently found in the towers and chimneys of the neighbouring buildings—eighteen dozens being taken out of a single chimney on one occasion. They were mostly deal laths, about nine inches long and an inch or more broad. A bird would grasp one edgewise in its beak, and if the soil was light, it could usually draw it out with but little difficulty: but if otherwise, it would pull the label first to one side, then to the other; and either, by persevering thus, effect its extraction, or tire itself and leave it.

† Wolley noticed at the same place that on the first day of his visiting several scores of nests none of the eggs were covered, but that on the two succeeding days some of those which had before been examined had their eggs partly or wholly covered by the lining, with the intent, it is supposed, to conceal them.

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* Jesse cites this structure as a proof of the bird's reasoning powers, a view which seems to be mistaken. He says that:—"As the staircase was a spiral one, the birds began to make a pillar of sticks on that identical step, which alone would give them the best foundation for their intended work. Had they gone to the one above, or to the one below that which they had so sagaciously fixed upon, it was very evident that they would not have acquired that precise slope or angle for their pillar, which was necessary for the effectual support of the nest." Now it would appear far more likely, from what we otherwise know of the Daw's habits, that the sticks were dropped one by one inside the window-sill without any such sagacious intent, and that the slope of the pillar, on which he so much relies, was determined by the sticks first dropped not finally resting where they fell, but slipping down to the next step as others lodged upon them, and so on until a firm base was established. Directly the mass accumulated so as to be clear of the step, the stack would naturally rise (as it seems from the figure to have done) perpendicularly to the window-sill. Jesse also remarks, in further support of his estimate of the bird's reasoning faculty, that "each of the sticks had been broken, or rather cracked exactly in the centre, so that they could be doubled up." That only cracked sticks should be found is not surprising, because no others could pass in the ordinary way, as already described, through the narrow window, but that they were intentionally cracked by the birds there is no proof whatever.

ticularly mentioned.* The eggs, which are laid towards the end of April or at the beginning of May, are from four to six in number; of a very pale bluish-green, more or less closely freckled or spotted with ash-grey and olive-brown, but sometimes of a french-white, marked with dove-brown only, and not unlike Choughs'. They measure from 1·45 to 1·24 by from 1·06 to ·92 in. The young, when taken from the nest in June, are easily reared and become remarkably tame, readily learning a variety of tricks.

The Daw lays itself open to many of the charges of rapine and destructiveness that are brought against its larger brethren, and is certainly of a fierce disposition, as its attacks on the eggs and young of other birds frequently prove. Yet its comparatively small size incapacitates it from inflicting the serious losses of which the Raven and the Crow are often the authors, and it is said not to steal potatoes as the Rook does. Its pilferings in gardens and orchards are not to be denied, and its trespasses in this way are sometimes considerable; but on the whole it must be regarded as a useful bird to the agriculturist, for in consuming injurious insects it is hardly inferior to the Rook, whose foraging parties it so often accompanies. It is a common attendant on sheep, on the backs of which it may be frequently seen to perch, and bears a good character for ridding them of some of their parasites. In pastures it obtains a good deal of food from the grubs which it finds under cowdung, but in a general way its diet is almost exactly the same as the Rook's. Of late the diminution of the Chough in this country has been attributed to the Daw driving away that species from its haunts; but, as before remarked (page 256), further information on this point is needed. The notes of the Daw are somewhat shrill and seem to have few modulations, yet when heard among those of the Rook the contrast is rather pleasing, especially as the former are ejaculated at intervals in a petulant volley, while the combined flock of the two species is making ready for the night. Daws also when forming a company by themselves will often rise suddenly in the air, and indulge in many playful excursions and circuits aloft, during which from time to time all will loudly exclaim almost at the same moment, producing a very singular effect. In whatever way they may be flocking, they nearly always fly in pairs, thereby corroborating Waterton's conjecture that once mated they remain paired for life.

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* The Editor was shewn by Mr. C. B. Wharton a lump of clay, bearing marks apparently of the bird's beak, found by him in a nest the eggs of which were smeared over with the same substance, as though intentionally.

The Daw is found to breed more or less abundantly throughout the United Kingdom, except in the Outer Hebrides, where it seems never to have been observed, and in Shetland, where it only occurs accidentally. It occasionally appears in the Færoes, but has never been recorded from Iceland by Faber or his successors in that country. On the continent it is not known to have occurred beyond lat. 65° N., which it reaches on the coasts of Norway and Sweden, and again about Archangel, but its range does not extend to the northward of 60° on the Ural or in Siberia, and Jenniseisk, where it seems to be but a stray visitor, is apparently its furthermost limit in an eastern direction. It is said to be common in Turkestan, and it visits the Punjab in winter. It has not yet been recorded from Persia, but abounds in the Caucasus and Armenia, and thence to Palestine. It was reported by Rüppell to be common in Arabia Petræa and Lower Egypt, but doubts have lately been cast on the statement. In parts of Algeria it is very abundant, yet its distribution in Morocco must be casual or local, as, though observed in large flocks at Tetuan, it is not recorded from Tangier. It has occurred as a straggler in the Canaries. It appears to frequent all the Mediterranean islands, from Cyprus, where Lord Lilford found it breeding, to Sardinia, but Major von Homeyer did not observe it in the Balearic Isles. Both in Spain and Portugal it seems to be a very local species, and indeed as much may be said for it throughout Europe generally, though it occurs in every country; but observations are wanting to define its distribution properly, especially as in some districts it is recorded as a migrant only, while it is said to be resident in others close to them.

The beak is black and short, about the same length as the head of the bird: the irides greyish-white: the crown of the head black, glossed with purple; ear-coverts, nape* and sides of the neck, smoky-grey; the rest of the upper parts black, glossed with rich violet and green, especially on the wings; all the lower parts dusky black: legs, toes and claws, black.

The whole length of a male is about fourteen inches; the wing from the carpal joint to the tip, nine inches and three-eighths; the first primary two inches and a half shorter than the second, which is three-quarters of an inch shorter than the third; and this is nearly equal to the fourth. The tail is slightly rounded.

The female is somewhat smaller, and has the grey on the neck less pure and conspicuous.

The young are of a nearly uniform, dull black, inclining to grey beneath; but with the grey collar scarcely perceptible. In this state they are probably the foundation of the *Corvus spermolegus* of Vieillot.

The vignette represents the Daw's sternum, illustrating its form in the family *Corvidæ*, which, as will be seen, is essentially the same as in all the true *Passeres*.

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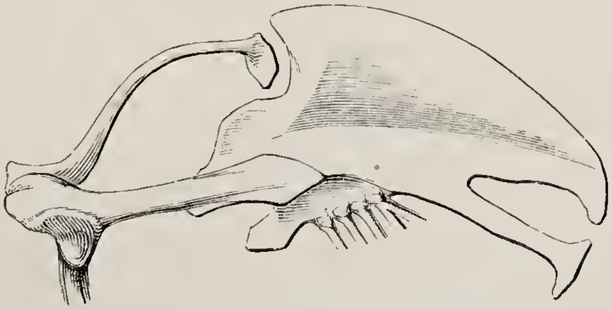
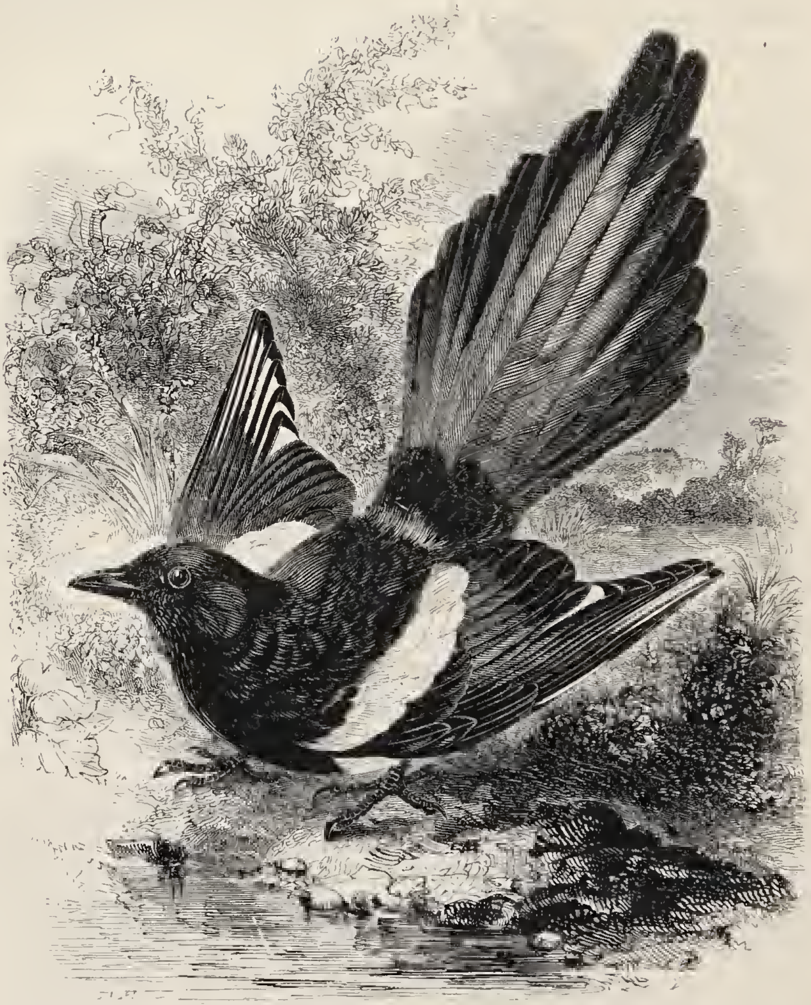
* Adult examples from South-eastern Europe and some parts of Asia generally have the nape much lighter, passing into silvery-white. They are the *Corvus collaris* of Col Drummond-Hay, but few ornithologists now deem their specific distinctness established. Further to the eastward occurs the *C. dauuricus* of Pallas, which has not only the collar broader and pure white, but much of the lower parts of the body white also.



PASSERES. *CORVIDÆ.*



Pica rustica (Scopoli*).

THE PIE.

Pica caudata†.

Pica, *Brisson*‡. Beak hard, stout and compressed, straight at the base, arched towards the point, sharp at the edges, and slightly notched near the tip of the upper mandible. Nostrils basal, hidden by stiff feathers, directed forwards. Wings short and rounded; first primary attenuated for two-thirds of its length and very short; the fourth or fifth the longest. Tail very long and graduated. Feet strong; tarsus longer than the middle toe, to which the outer toe is united as far as its first joint; claws curved and sharp.

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* *Corvus rusticus*, Scopoli, Annus I. Historico-Naturalis, p. 38 (1769).

† Fleming, Hist. Brit. Animals, p. 87 (1828). ‡ Ornithologie, ii. p. 35 (1760).

ALTHOUGH none of our birds is better known than the Pie, yet its singular beauty is almost unsuspected by those who are accustomed to see it only at a distance in the fields, or penned in a cage where its feathers are soiled and its form is disfigured by confinement. That in byegone times it was in England a much more familiar bird, is certain from the frequent mention made of it by writers on almost every kind of subject, from the many omens it furnished to popular superstition, and from its being one of those species to which human names were applied, as the existing appellations Magpie, Nanpie and Piannet sufficiently prove*. Its habits have long since earned for it the enmity of the housewife and the gamekeeper, and now should it ever shew its pied plumage near a homestead all its proverbial cunning fails to ensure its safety. It consequently leads the life of an outlaw, shunning observation as much as possible, fearing a foe in every inoffensive passenger, and knowing that danger may lurk in every bush. The allusions which its character so readily offered to the poets and the philosophers, the divines and the dramatists of a former period, have lost half their force, and instead of the merry, saucy, semi-domestic intruder upon our curtilages, we have the suspicious thief slinking out of sight even when no harm is intended. The change of demeanour has indeed been thorough. Montagu at the beginning of the present century wrote that "though shy it rarely removes far from the habitation of man", which was no doubt quite true of the bird here in his time, as it still is true of it in several other countries, but a Pie near a human dwelling, so far as England is concerned, is nowadays hardly to be seen from one year's end to another's. That its attachment to man, as remarked by the same author, was governed by self-interest is only what may be said of many other species; and, though the indictment which he and others have drawn up against it as a spoiler may contain no charge that is absolutely unfounded, yet the example set by the thrifty husbandmen of France, Belgium and Scandinavia shews that the presence of this bird is not fraught with so much danger to their live stock as its prosecutors would make out, for in all those lands, and especially in Sweden and Norway, it is the tolerated if not the cherished neighbour of every farmer, its depredations being practically unfelt.

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* So also Madge and Magot; another old name was Rikelot or Kikelot (Ancren Riwle, Ed. Morton, pp. viii. and 88). In France it is *Jaquette* and *Margot.*

With regard to the charges often made of destroying lambs and weakly sheep by plucking out their eyes, it is quite likely that such cases have happened, but their number must be small, and there is great want of admissible evidence as to the alleged facts.* The sucking of eggs and the carrying off of young poultry would seem to be the gravest crimes commonly committed by the Pie near homesteads, for its pilfering of fruit-gardens does not amount to much. To game, however, it is very injurious, or rather would be so but that little skill is needed to lay the poison or to set the trap which will end the destroyer's days, and in one or both of these methods ceaseless war is waged against this bird by nearly every gamekeeper throughout these kingdoms, with the result, as has been stated, of almost extirpating it in many districts. Yet its numbers are still considerable in the wilder and least frequented parts of England, and the roving habits of the young to some extent supply incomers to replace those that suffer a malefactor's death. There can be no doubt but that, were persecution abated, the Pie would speedily become as common as it once was, for it is very prolific and, since little comes amiss to its omnivorous appetite, food would generally be plentiful. There also is reason to think that its restoration to its former abundance might be a decided gain to the agriculturist, since slugs, snails, insects and worms form, out of all proportion to anything else, the greater part of its diet, for its consumption of grain or fruit is trifling,* and it is also a great destroyer of mice and rats—a fact of which the gamekeeper is seldom mindful though never forgetting its assaults on leverets and rabbits.

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* Not that there is any doubt of the mode of attack whenever the Pie assails an animal sufficiently large to be troublesome if possessed of sight, and even one no bigger than a Redwing may be thus treated (Zool. p. 2779).

Partial as it is to cultivated and wooded districts, the Pie is not by any means a strictly woodland-bird, and it is well content with an open country if a sufficiency of bushes or trees standing apart is there to be found; for, its flight being laboured and comparatively weak, it seldom goes willingly far from a place of shelter.† It is an exceedingly restless and noisy bird, and even when hiding from danger can scarcely leave off its characteristic chatter. Always vigilant, at times it becomes extremely vociferous, especially at the sight of a dog, a fox or a cat; and, flitting from tree to tree, keeping of course at a safe distance, will follow an intruder, quadruped or biped, to the limits of its haunts*. Nearly all its food is sought on the ground, but morsels that cannot be swallowed at once are carried away to be conveniently and more safely managed, or hoarded against future need. Consequently the bird is nearly always on the move, flying up from its prey to its perch and thence back again. In pastures it continues longer on the ground, by turns walking, running or hopping, halting to pick over the cattle-droppings in search of grubs which furnish it with some of its chief supplies. When employed on the grass its long tail is generally elevated, though often moved briskly up and down, and its head is carried erect. By preference the Pie seems to live in pairs all the year round, and the adults when permitted are sedentary, seldom going far from their home; but the young keep their parents' company for several weeks after leaving the nest. Sometimes larger assemblies are seen, and the Author once counted twenty-three together in Kensington Gardens, but these are now become rare in England though occasionally to be observed in districts where the species happens to be comparatively numerous.†

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* It is said also to be of service in ridding cattle of maggots embedded in their hide, and sheep it will free from lice.

† Hunting this bird to death by a process in which Falcons are trained to take part—and hence called "Magpie-hawking"—is a pursuit followed by some persons with great pleasure. However much excitement may attend it, to the Editor it appears nearly the utmost degradation of a noble sport. There is no gallant contest of speed and power. Bird is not matched against bird in open flight, for on the wing a Pie has not a chance against a Falcon. The quarry's only resource lies in his cunning and sagacity, which are met by driving him from one refuge after another until none be left, when he becomes an easy victim to the clutch of the Falcon (the most merciful perhaps of his persecutors) and his terror and fatigue are at once ended. This may seem too strong a condemnation, but that the reader may judge for himself, Sebright's description, to the truthfulness of which the Editor can bear witness, is added:—"A down or common, where low trees or thorn bushes are dispersed at the distance of from thirty to fifty yards apart, is the place best calculated for this diversion. When a magpie is seen at a distance, a hawk is immediately to be cast off. The magpie will take refuge in a bush the moment that he sees the falcon, and will remain there until the falconer arrives, with the hawk waiting on in the air. The magpie is to be driven from his retreat, and the hawk, if at a good pitch, will stoop at him as he passes to another bush, from whence he is to be driven in the same way, another hawk having been previously cast off, so that one or the other may always be so situated as to attack him to advantage. The second hawk is necessary, for the magpie shifts with great cunning and dexterity to avoid the stoop; and when hard pressed, owing to the bushes being rather far apart, will pass under the bellies of the horses, flutter along a cart rut, and avail himself of every little inequality of the ground in order to escape. Four or five assistants, besides the falconer, (who should attend solely to his hawks) are required for this sport. They should be well mounted, and provided with whips; for the magpie cannot be driven from a bush by a stick; but the crack of a whip will force him to leave it, even when he is so tired as hardly to be able to fly. Nothing can be more animating than this sport: it is, in my opinion, far superior to every other kind of hawking. The object of the chace is fully a match for its pursuers—a requisite absolutely necessary to give an interest to any sport of this kind; and it has the advantage of giving full employment to the company, which is not the case in

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partridge-hawking. The magpie will always endeavour to make his way to some strong cover; care, therefore, must be taken to counteract him, and to drive him to that part of the ground where the bushes are farthest from each other. It is not easy to take a magpie in a hedge. Some of the horsemen must be on each side of it; some must ride behind, and some before him; for, unless compelled to rise, by being surrounded on all sides, he will flutter along the hedge, so as to shelter himself from the stoop of the falcon. Many requisites are necessary to afford this sport in perfection—a favourable country, good hawks, and able assistants."

[*] Some gamekeepers know how to profit by this telltale peculiarity. Waterton writes of his being at the capture of a notorious poacher effected solely by its means.

[†] Among recent observations of the kind in England may be noticed that of Mr. C. M. Prior (Zool. s.s. p. 4879) who saw thirty-four in a stubble-field in November 1875; while, writing in 1876, Mr. W. A. Durnford says (*op. cit.* p. 4907) that about Furness he has frequently counted as many as thirty in a flock in December or January.

These gatherings are probably the result of the migratory tendency possessed by the young birds of the year, and it is unquestionable that every autumn a large number arrive in this country. In winter also Pies are apt to congregate towards evening, and roost together in thick woods, separating again however during the day.

The Pie begins to breed early in spring, building in high trees, or in hedge-rows*, and not unfrequently in low but thick bushes†, returning to the same nest for several years in succession, when the mass of materials accumulated will often be enormous. The fabric is a masterpiece of ingenuity, being wonderfully constructed for security against most enemies. It is large and of an oval or spherical shape, formed of stout sticks, turf and clay, piled together as a foundation, the top of which is wrought into a deep, hollow cup, plastered with earth on the inside, and neatly lined with a bedding of fibrous roots and sometimes, it is said, dry grass. The outside is further beset with smaller but long sticks chiefly of the blackthorn, the sharp spines of which project in every direction. This outwork is firmly interwoven, and carried up above the body of the nest so as to form a basket-like dome of somewhat looser texture over the top. A single opening is left on the side just large enough to give passage to the parent bird, who generally sits with her head to the hole, ready to repel any intruder with whom she may cope, or to quit the nest on serious alarm. The eggs, from six to nine in number, are usually of a very pale bluish-green, closely freckled with olive-brown over some ash-coloured blotches, but sometimes of a light yellowish-brown with olive markings; they measure from 1·61 to 1·22 by from 1·01 to ·89 in.

When taken young the Pie is easily tamed, and will soon learn to imitate the human voice, and to perform many entertaining tricks. If the conditions of its captivity are favourable it will, as noticed by Dr. Bree (Zool. p. 8632), even breed in confinement. The desire to pilfer and hide any small shining article, observable in all the birds of this family, is particularly conspicuous in the Magpie, and has been made the subject of a dramatic performance of an interest so intense, that few who have witnessed the exhibition are likely to forget.

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* It is commonly believed in parts of England, as M. de Selys Longchamps says it also is in Belgium, that the Pies which build in hedges are smaller than those which breed in trees.

† In countries where it is not molested it often builds under the eaves of houses.

Through its bad name the Pie is now become, as before remarked, a rare bird in England; but some pairs breed yearly in every county. In Scotland it is more common, and in certain parts of the country may still be called numerous. It is not found in Shetland, Orkney or the Outer Hebrides, but, according to Mr. Gray, occasionally visits Islay and Mull.

It is now very common throughout Ireland; but that this was not the case once, is proved by investigations begun by Ogilby, and published in the First Edition of this work, though some of the evidence was unknown to him. In the 'Polycronicon' of Ranulphus Higden, who died about 1360, the Pie is named among various animals not found in Ireland*. This chronicle was translated by John of Trevisa between 1357 and 1387, and the portion containing a description of the three kingdoms was printed in 1480 by Caxton. In that of Ireland, the passage (fol. 24*b*) runs thus:—"Ther lacken vnkynde faucons, gerfaucons, partrychis fesaunte, Nyghtyngals & pyes, Ther lacken also Roo and bucke and Ilespiles wontes and othir venymous bestes."

In 1578, Derricke, who wrote 'The Image of Irelande', published in London in 1581, says—

No Pies to plucke the Thatch from house,
  are breed in Irishe grounde:
But worse then Pies, the same to burne,
  a thousande maie be founde †

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* Higden's words, as given by Prof. Churchill Babington in 1865 (Rolls Ed. i. p. 338), are:—"desunt hic degeneres falcones, quos laniarios vocant, desunt et gyrofalcones, perdices, phasiani, picæ et philomelæ. Caret quoque capreis et damis, hericiis, putaceis et talpis et cæteris venenosis." This list of deficiencies has largely benefited subsequent writers, and generally without acknowledgment on their part.

† On the margin are the notes "Irelande hath no Pyes breeding in it", and "Better it were to haue Pyes thē prowlers."

In 1589, one Robert Payne wrote 'A Brife description of Ireland'—the apparently unique copy of the second edition of which was reprinted by Dr. Aquilla Smith among the 'Tracts' published by the Irish Archæological Society in 1841, and herein (i. no. 2, p. 14) we find it remarked that in Ireland "There is neither mol, pye, nor carren crow". In 1617, Fynes Moryson was still able to repeat (Itinerary, pt. iii. bk. iii. p. 160) "*Ireland* hath neither singing Nightingall, nor chattering Pye, nor vndermining Moule"; but in 1711, Dean Swift, writing in his 'Journal' to "Stella" (Esther Johnson) says (letter xxvi.), under date of July 9, 1711, of Wexford:—"magpies have been always there, and no where else in Ireland, till of late years."* This statement, though no doubt partly erroneous, points to the first appearance of the bird in the south-east of the island. K'eogh, in 1739, included it as an Irish species in his 'Zoologia Medicinalis', assigning it (p. 61) a native name "Maggidipye"†; and Charles Smith, writing about 1746, says (Antient and Present State &c. of Cork, ii. p. 325), that, though then very common, it was unknown fifty years before, while Rutty in 1772 observes:—"It is a foreigner, naturalized here since the latter end of K. *James* the IId's reign, and is said to have been driven hither by a strong wind." There is however a widely-spread belief in Ireland that the Pie was imported into the country by the English out of spite. At what precise date and under what circumstances it first made its appearance we must remain in doubt, but the bird is now unquestionably abundant enough in many parts, and Capt. Clark-Kennedy informs the Editor that he has counted more than seventy in a single field in Donegal.

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* Hereon Ogilby writing to the Author says:—"It must be confessed that the testimony afforded by this passage is not so explicit as could be wished. That the Magpie existed always, or, in other words, was indigenous to the vicinity of Wexford, and to no other part of the country, is scarcely credible, even if it were not directly contradicted by the preceding quotation from Derrick. That it might have continued to be a local denizen for a considerable time after its introduction, is more probable, and more in accordance with the habits of the bird: and this circumstance of its locality probably gave origin to the popular idea expressed by Swift, of its being indigenous to the county of Wexford. We may, however, conclude with greater certainty,—for upon this point our authority is express,—that it was only in the reign of Queen Anne that the bird began to spread generally over the kingdom;—that is, at the same period as the introduction of Frogs; and indeed I have sometimes heard these two events spoken of traditionally as having been simultaneous. The town of Wexford is remarkable as having been the first place of strength in the island which was reduced and colonised by the English. Even to the present day the great majority of the inhabitants of that part of the country are of English extraction; and it is not improbable that their forefathers brought the Magpie with them from England, perhaps as a pet, to put them in mind of their native land; for it is scarcely possible that any one would voluntarily introduce so mischievous an animal. At all events, St. Patrick's curse, which is said to rest so heavily on the whole tribe of serpents, does not appear to have extended to Frogs and Magpies, for I know no part of the world where both breeds thrive better or faster than in Ireland."

† Dr. A. Smith hereon observes:—"This evidently Anglo-Irish word, for we

To return to the geographical range of this bird, a matter on which opinions are divided. It is very generally distributed throughout the continent of Europe, for, though examples from the south of Spain present some slight variation,* hardly an ornithologist is now so bold as to say that we have two species in this quarter of the globe. From information obtained by Wolley in Lapland, it appears within the last century to have been gradually pushing its way along the coast and into the interior from one fishing-station or settler's house to the next, and it has now reached the vicinity of the North Cape on the one side and far up most of the river basons on the other. In the north-east of Russia it is not known to extend beyond Cholmogory in the Government of Archangel. It is found in the larger islands of the Mediterranean from Sicily to Cyprus, as well as in Asia Minor, but is nowadays wanting in Syria and Palestine, though given by Russell as occurring about Aleppo in the last century. Rüppell included it as being pretty plentiful in winter in Lower Egypt, where later observers have failed to find it. Further to the eastward the difficulty begins. Under various names Pies from different parts of Asia have been described as forming at least five distinct species†; but both Mr.

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have no name for it in the ancient Irish language, favours the opinion held by our best informed naturalists, that this bird is of recent introduction into this country." The Welsh name seems to be *Piogen* and the Gaelic *Pioghaid*.

* They have the rump pure black and a bare spot behind the eye, in these characters resembling the Pie of North-west Africa, *Pica mauritanica;* but that has the postocular patch of a fine blue and the wings much shorter.

† These are *P. leucoptera* from Turkestan and Tibet, *P. bactriana* from

Dresser and Mr. Sharpe, two of the most recent investigators of the subject—the one in his well-known 'Birds of Europe', and the other in his 'Catalogue of the Birds in the British Museum' (iii. pp. 62–66)—agree in refusing them that rank, though more or less doubtfully allowing the *Pica leucoptera* of Central Asia to be a local race or subspecies, while on the other hand Dr. Finsch considers it a very good species *. With the possible exception then of the undefined territory occupied by this form, we may conclude that the greater part of the rest of Asia belonging to the Palæarctic Region, to about lat. 60° N. †—that is, from Persia to Kamchatka and Japan—is occupied by our own species, which also occurs throughout China, with its islands Hainan ‡ and Formosa. Crossing Behring's Strait a Pie is found inhabiting the western part of North America from Alaska, and some of its outlying islands as Ounga and Kodiak, as far south as Arizona, and stretching eastward to the upper waters of the Missouri and Yellowstone. This bird has been by many ornithologists regarded as a distinct species under the name of *Pica hudsonia*, and much ingenuity has been exercised to establish that view; but none of the differences assigned (*cf.* Pr. Max, Journ. für Orn. 1856, p. 204) seem to be constant, and even Messrs. Dresser and Sharpe are at one in considering it specifically identical with our own bird, the longitudinal range of which in the northern hemisphere is therefore very extensive. §

Affghanistan, *P. bottanensis* from Bhotan, *P. media* from China and *P. japonica* from Japan (*cf.* G. R. Gray, Hand-List, ii. p. 10). There is also Mr. Hodgson's *P. tibetana* (Ann. & Mag. N. H. ser. 2, iii. p. 203) which, according to Blyth (Ibis, 1867, p. 36), should have no white on the scapulars, but herein there seems to be some mistake.

* It is described by Mr. Sharpe (*op. cit.*) as being similar to *P. rustica*, "but having the white on the quills extended sometimes to the very tip of the inner web, never reaching less than to 0·3 inch of the tip; on the throat the base of the feathers white; tail in adult bird coppery green."

† Mr. Seebohm was informed of its occasional occurrence on the Jennesei so far as 69½°. As in Lapland it will probably extend its range as settlements increase.

‡ In Hainan, says Swinhoe, its introduction was effected about A.D. 1450—a singular parallel to its appearance in Ireland some two hundred years later.

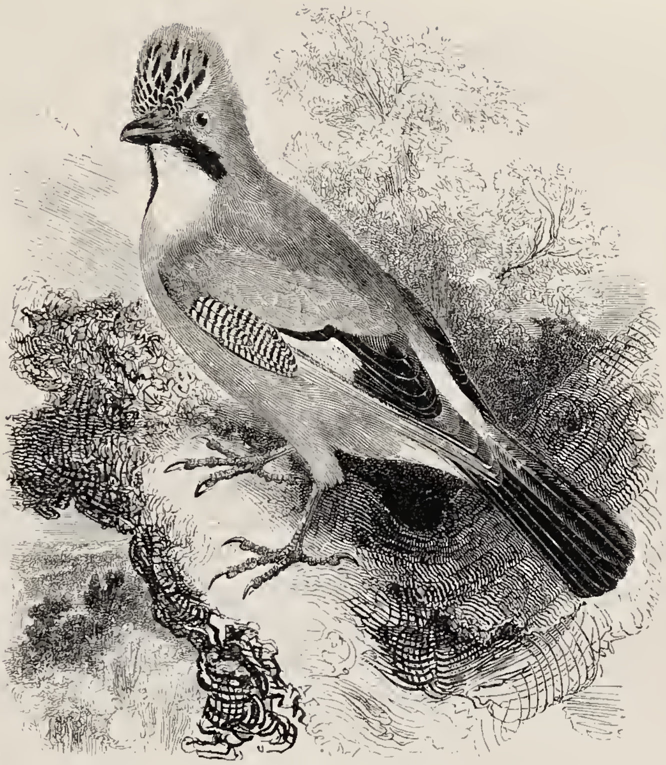
§ In California however there is what is often deemed a second species, *P. nuttalli*, easily recognized by its yellow bill and the bare, yellow skin round

The beak is black: the irides hazel: the head, neck and back, black with a greenish gloss; rump generally greyish-white; upper tail-coverts black; scapulars pure white; upper wing-coverts and tertials of a fine shining blue, tinged according to the light in which they are seen with green; secondaries black, glossed with violet; primaries black glossed with green and having an elongated patch of pure white, varying in extent, on the inner web of each; tail black but beautifully iridescent above, on the outer web of all the side-feathers and on both webs of the middle feathers, being richly glossed with greenish-bronze, passing through purple at either end and tipped with violet-black. Chin and throat black, the shafts of some of the feathers shining greyish-white; upper part of the breast black; the lower part of the breast, the belly, sides and flanks, pure white; thighs and lower tail-coverts black: legs, toes and claws, black.

The size varies not inconsiderably but the average length of a male is fully eighteen inches, of which the longest tail-feathers often measure nearly eleven; the wing from the carpal joint to the tip is about seven inches and a quarter: the first primary only two inches and a half long; the second about an inch shorter than the third; the fourth, fifth and sixth nearly equal in length, but the fifth is commonly the longest.

The female is smaller, the tail is shorter, and the plumage less brilliant.

the eyes; but as Prof. Baird has remarked (B. N. Am. p. 578):—"It is a very serious question, whether the bird is anything more than a permanently yellow-billed variety of the common bird." Here may be noticed the very remarkable fact that a Pie with a yellow beak has twice been seen in Great Britain, first by Mr. Harvie Brown and Mr. J. G. K. Young in Stirlingshire, Feb. 23d, 1867 (Zool. s.s. pp. 706, 877), and secondly, in the July following, by Mr. G. F. Mathew near Buckfastleigh in Devon (*op. cit.* p. 1016). Whether these birds were accidental varieties of our own form, or imported examples, and still more whether, notwithstanding the wide distance of the two localities, the same individual was twice seen, must remain open questions; but the accuracy of the observation in neither case admits of doubt. A specimen curiously discoloured, even to its bill, is mentioned by Macgillivray (Br. B. i. p. 365); and a Daw with a yellowish bill has been known for more than two hundred and fifty years (Schwenckfeld, Theriotroph. Siles. p. 305).



GARRULUS GLANDARIUS (Linnæus*).

THE JAY.

Garrulus glandarius.

GARRULUS, *Brisson*†. Beak shorter than the head, hard, stout and compressed, straight at the base, sharp at the edges, commissure straight. Nostrils basal, hidden by stiff feathers directed forwards. Feathers of the crown long and erectile. Wings moderate, rounded; the first primary short and not attenuated, the fourth, fifth and sixth, nearly equal, and one of them the longest in the wing. Tail moderate and slightly rounded. Feet strong, tarsus longer than the middle toe, to which the outer toe is united at its base; claws stout, curved, and sharp.

THE JAY is a handsome bird, still well known in most of the wooded districts of England, though far less numerous than formerly. More arboreal in its habits than the other members of its family which constantly abide with us, it prefers the shelter and security of thick coverts, never frequenting the open country, and rarely seen on the ground unless beneath trees or bushes, where it finds its chief sustenance, which consists for the greater part of the year of worms, insects and slugs, such kinds of berries or fruit as are in season, and especially nuts, beech-mast and acorns. These last it frequently stores in chinks of the bark of trees, hides under fallen leaves, or buries in the earth, not, as has often been said, in hoards, but separately, as convenience or fancy may direct. Generally shy and wary in summer, tempted by cherries, strawberries, plums and pease, it boldly makes inroads into our orchards and gardens, and unquestionably will, if permitted, devour or carry off no small portion of the crops; but, in most cases, the plunder can be prevented by nets, or where the ground is too extensive for their use, the marauders can generally be kept off by a few gunshots, though should they still persist in their depredations the death of two or three and the exposure of their bodies will effectually stop the visits of the survivors. However, the most serious charge brought against the Jay is that of rifling the nests of other birds, and, though the extent of its egg-sucking and chick-killing propensity is doubtless greatly exaggerated, its effect is to make an enemy of every gamekeeper, and no mercy is shewn to the race, recourse being had to any device that will lessen its numbers, as the dismal array of decaying carcases that disfigures many a pleasing glade testifies. Consequently in many parts of the country the Jay has been almost extirpated, and were it not for its wandering disposition and its extraordinary caution during the breeding-season, it would soon cease to exist in England. Noisy as is the bird in autumn and winter, when spring draws on it becomes almost silent, and the detection of its presence by any sound it may utter is then almost impossible, so that a pair of Jays or more may take up their abode even in a moderately small wood or plantation without their presence being suspected by any save the most attentive observer. The appearance of a Fox or Cat, however, dispels this cautious behaviour and produces for a time a scolding outcry the meaning of which is unmistakable to those who are alive to country-sounds.

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* *Corvus glandarius*, Linnæus, Syst. Nat. Ed. 12, i. p. 156 (1766).

† Ornithologie, ii. p. 46 (1760).

The Jay seldom builds its nest above twenty feet from the ground, preferring tall coppice or a bush in a high hedge-row, while occasionally one of the lower branches of a large tree, if sufficiently leafy to afford concealment will be chosen. The nest is cup-shaped, open at the top, consisting of a large platform of short sticks and twigs, thickly lined with fine roots very neatly interwoven and sometimes intermixed with a few grasses.* Towards the end of March or early in April the hen lays from four to seven eggs of a greenish-white, so closely minutely and thickly freckled all over as to seem suffused with light olive, and almost presenting the appearance of gigantic eggs of the Sedge-Warbler; but the markings are sometimes gathered into a zone. They measure from 1·33 to 1·16 by from ·95 to ·85 in.

The young follow their parents for some weeks after leaving the nest, but subsequently their practice varies greatly in different localities, depending doubtless on the supply of food obtainable. In certain districts the family party will keep together for the greater part of the winter, but most generally the young seem to quit the place of their birth, and to form small bands which wander to and fro throughout the autumn and winter. In the fall of the year this country, and especially its eastern parts, is commonly visited by a large number of Jays which have probably been bred abroad, and from them our stock is very likely replenished. Sheppard and Whitear have recorded an observation of the arrival at this season near the coast of Suffolk of a flight of Jays, consisting of some thousands, but the incident on so large a scale must be regarded as out of the common way.

Brought up from the nest, Jays soon become very tame and are amusing captives, thriving best on a mixed diet, though preferring animal food. In addition to their natural harsh screech, which, so "discordant, heard alone," always brings pleasure to the ear of a true naturalist, they speedily learn many other notes, and indeed there is scarcely any sound that comes in their way which they will not imitate more or less exactly—from the human voice to the noise of any instrument, a saw for example. This mocking faculty is also possessed by wild birds of the species, though opportunities of listening to its exercise do not readily occur to most ornithologists, and the bleat of a lamb, the neigh of a horse, the mew of a cat, the bark of a dog, the wail of a Kite or Buzzard (in the days when Kites and Buzzards still inhabited our woods), the hoot of an Owl, the crow of a Cock or the cackle of a Hen, have been heard by persevering or favoured observers to be faithfully rendered by the Jay. These imitations are chiefly practised in early spring, and, interposed with sounds that suggest articulate pronunciation, as well as ejaculations of a kind quite indescribable in words, which are connected by soft and melodious notes, are introduced into what may fairly be called the song of the species. But to hear such a performance is the reward of those only that know how to approach the timid and wary musician, who during its execution is embowered among leafy shades, and is ever on the alert to take alarm at the slightest unwonted rustle of a bough, the crack of a twig, or at a footfall that is not absolutely inaudible.

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* The nest has been found in the hole of a tree (Journ. f. Orn. 1861, p. 470.)

The flight of the Jay seems to be laborious, the bird making its way with an undulating progress and frequent flappings of its wings. Generally it is seen only when flitting for a short distance from tree to tree, but its migrations prove that it is capable of sustaining a very long voyage through the air. On the ground it moves chiefly if not entirely by hopping, never, so far as has been recorded, walking or running like most of the *Corvidæ*. When perched on a tree and thinking itself unobserved, its gesticulations are free and lively. The head is constantly turned from side to side, the crest alternately raised and lowered, the wings at times drooped and then drawn up and concealed by the long loose feathers of the flanks, the tail elevated and depressed, and swung now to the right and now to the left. He, however, who would watch the actions of the Jay, must act as cautiously as has been prescribed in the case of him who would hear its varied utterances; for, on perceiving the human presence, the bird instantly shifts to a thick bough if such be near, or, if compelled to remain exposed, becomes motionless and silent—looking like a dead stump, and when the intruder's nearer approach urges a change of position it drops as though shot into the brushwood beneath, making its escape thence in some unexpected direction.

As before observed, the Jay is less common in England than formerly, though Mr. Cordeaux notes its increase of late years in Lincolnshire; but in Scotland, according to the very careful researches of Mr. Lumsden (Scott. Nat. iii. p. 233), it has decreased of late years even more rapidly than in England, being in all counties south of the Grampians but local, and in few anything but rare. North of that chain it seems only to appear as a straggler. There is no evidence of its occurrence in Orkney, and but one is recorded in Shetland. All Mr. Lumsden's authorities concur in saying that formerly the Jay was much more common in Scotland, and that its decrease is attributable to its destruction by gamekeepers*. In Ireland it seems now to be indigenous but in the southern half of the island, and even there to be very local and far from numerous, though there is reason to suppose, from the evidence adduced by Thompson, that it once inhabited and bred in the northern counties. In Norway and Sweden it seems to travel so far as lat 64° N., but it occasionally extends far within the Arctic Circle, Wolley having obtained it in autumn near Muonioniska. It inhabits most parts of Finland, and is said to be resident all the year round even at Kajana, and thence it is found across the forest region of Russia to the Ural Mountains, where it is replaced by the nearly-allied but more deeply-tinted *Garrulus brandti*.† Further to the south the line of demarcation between *G. glandarius* and the kindred *G. krynicki*, which seems to be a distinctly recognizable form, can hardly yet be drawn, and the elder Von Nordmann says he has seen in the Crimea individuals intermediate between the two. The common Jay, however, inhabits the forest-districts to the west of the Black Sea to Constantinople, and thence throughout Epirus and Greece. Col. Drummond-Hay found it breeding in Crete. It inhabits nearly all suitable districts throughout the European Continent, and most of its islands[*], as Sicily and Sardinia, but in the south of Spain, as at Gibraltar, it is only a winter-visitant, and it does not appear to cross the Mediterranean to Africa[†] —Malta even being outside its range—and its place in Algeria is taken by the very distinct *G. cervicalis*.

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* But what also causes the death of a very large number of Jays is the value set upon its pretty blue feathers by fishermen for making artificial flies.

† Herr Sabanaeff informed Messrs. Sharpe and Dresser that the Jay found in Perm, Kasan and Simbirsk is an intermediate "species" between *G. brandti* and *G. glandarius*.

The beak is blackish horn-colour: the irides very pale blue: on each side of the gape there is a black patch an inch long; face, forehead and crown dull-white tinged with buff, each feather tipped with black, which, as the feathers become elongated, takes the form of a median stripe, until behind the line of the eyes these stripes pass into purplish-cinnamon curiously barred with a distinct shade of the same colour; the nape, scapulars and back, cinnamon; wing-coverts barred with very pale blue, deepening into bright cobalt-blue and then into black, across the exposed part of the web, the hidden part being nearly uniform black; primaries dusky black, externally edged with dull white; secondaries velvet black, each with a well-defined white patch, often tinged with blue, on the basal half of the outer web; outer tertials velvet-black, indistinctly barred with blue and black at the base of the outer web; inmost tertials rich chestnut; rump and upper tail-coverts pure white; tail-feathers blackish-brown, indistinctly barred with pale blue at the base; chin and throat dull white; breast and belly pale cinnamon deepening in colour on the flanks; vent and lower tail-coverts dull white; wings and tail-feathers beneath smoke-grey: legs, toes and claws, pale brown.

The whole length varies from thirteen inches and three-quarters to fourteen inches and a half or even more. From the carpal joint to the end of the wing, seven inches and an eighth; the first primary about two inches and a half long; the second about four inches and an half, and nearly an inch shorter than the third; the fourth, fifth and sixth nearly equal, but the fifth longest.

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[*] Mr. Cecil Smith excludes it from his recent 'Birds of Guernsey'.

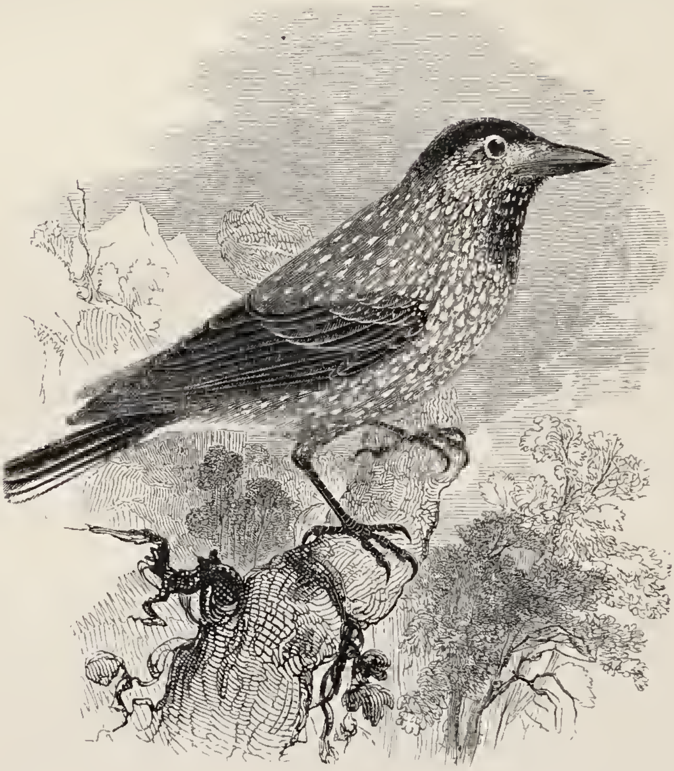
[†] Unless, indeed, the *G. minor* described from Algeria by J. P. Verreaux be, as Mr. Dresser states, the young of *G. glandarius*.

There is little difference in the plumage of the sexes, and the young also resemble the adults, but have brown irides.

The expediency of dividing the Linnæus genus *Corvus* has long been recognized and the genera here adopted are accepted by nearly all modern systematists. The Editor is inclined to regard the *Corvidæ* as the most highly-organized family of the Order *Passeres*—themselves the highest type of Bird-structure. In most of the genera of this family, the first plumage of the young resembles that of the adult, the occasional exceptions found in the Rook being perhaps explicable on the hypothesis before suggested (*suprà* page 303); but in that view the genus next to be described must be deemed less developed and differentiated, retaining as do most of its members that unmistakable mark of youth—a spotted plumage—to the end of their life.

To THE
SUSPENSION. Br

PASSERES. *CORVIDÆ.*



NUCIFRAGA CARYOCATACTES (Linnæus [*]).

THE NUTCRACKER.

Nucifraga caryocatactes.

NUCIFRAGA, *Brisson*[†].—Beak about as long as the head, hard, stout and straight, dilated at the base; both mandibles terminating obtusely, the maxilla prolonged and slightly depressed at the tip. Nostrils basal, round, hidden by stiff feathers directed forwards. Feathers of the crown short. Wings moderate and rather pointed; the first primary the shortest, the fourth, fifth and sixth nearly equal, but the fifth longest. Tail moderate and nearly square. Feet stout; tarsus longer than the middle toe, to which the outer toe is united at the base; claws stout, curved and sharp.

THE NUTCRACKER, though not uncommon in some parts of Europe, occurs in this country so rarely that the examples recorded as obtained may be here enumerated. The first known is said by Pennant (Br. Zool. Ed. 1, p. 78 note, and Ed. 2, ii. p. 488) to have been shot at Mostyn, in Flintshire, October 5th, 1753. Latham, in 1781 (Synops. i. p. 401), added a second instance, having seen the mutilated skin of one obtained in Kent. In 1813*, Montagu mentioned one in the collection of Mr. Comyns, which had been shot in North Devon in August 1808. Another was recorded by Moore (Mag. Nat. Hist. ser. 2, i. p. 179) as shot near Washford Pyne Moor, in the same county, in 1829, by Mr. W. Tucker. On September 26th, 1844, one, now in Mr. Borrer's collection, was killed at Littlington in Sussex (Zool. p. 868), and on October 30th of the same year, another, which passed into Mr. Gurney's possession, was shot at Rollesby, near Yarmouth (*op. cit.* pp. 824, 1020, 1873). About 1847 one is said (*op. cit.* p. 2914) to have been killed on Clandon Common in Surrey, and early in October, 1853, one was obtained near Yarmouth (*op. cit.* pp. 4096, 4124). Mr. Foster recorded (*op. cit.* p. 6809) one killed at Wisbech, October 8th, 1859, and on the same day of 1864, one was obtained at Gorleston in Suffolk (*op. cit.* p. 9405). In the autumn of 1865, according to Mr. Harting, one was killed near Wakefield, and on November 6th, 1868, one near Christchurch (Zool. s. s. pp. 1481, 1511).†

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[*] *Corvus caryocatactes*, Linnæus, Syst. Nat. Ed. 12, i. p. 157 (1766).

[†] Ornithologie, ii. p. 46 (1760).

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* In the same year (1813) Graves figured (Br. Orn. ii.) a specimen from Bullock's Museum, said to have been shot in Devon and given to the proprietor by a Mr. Harrison. No notice of it, however, is taken in the 'Guide' to that collection nor in the catalogue of its contents when sold a few years later. The anonymous compiler (believed by Mr. Harting to have been Mr. James of Manaccan) of a list of the birds of Cornwall and Devon (Monthly Mag. xxvi. pt. ii. p. 434, for Dec. 1808) mentions one seen by him in autumn in one of those counties. Whether it was the specimen recorded by Montagu is uncertain.

† In 1846, Messrs. Gurney and Fisher mentioned (Zool. p. 1315) an example "taken some years since at Southwold, in Suffolk," but the Editor, without expressing any doubt as to the statement, is compelled to remark that he has failed in obtaining any confirmation of it. He is however informed by Sir E. Kerrison that he has had a specimen in his possession for about forty years, which he believes to have been killed at Oakley Park in the same county. An example is said (Zool. p. 4168) to have occurred near Whitehaven in Cumberland, but the list which includes it contains so many extraordinary assertions that belief in this particular statement may await the adducement of further evidence, the more so since it is not declared whether the example was procured

As regards Scotland, Macgillivray says that a specimen then in the Museum of the University of Edinburgh was said to have been shot in that kingdom, and that there was another in the collection of Mr. Arbuthnot at Peterhead, which last is alleged by the author of the Statistical Account of that parish to have been killed there.* Neither of these statements can be fully accepted, and the only occurrence of the species in Scotland which is free from doubt would seem to be that of an example sent to Mr. M'Leay of Inverness, having been shot, according to Mr. Gray, at Invergarry in that county in October, 1868. The Nutcracker cannot be announced with any certainty as having been observed in Ireland. Templeton's notes, quoted by Thompson, mention one shot in Tipperary, but the naturalist last named put little faith in the statement, and Mr. Watters does not even allude to it.

There is much likeness between the history of this species and that of the Waxwing as before given (vol. i. page 523). The Nutcracker had been for centuries a well-known bird in Western Europe, appearing at irregular intervals, mostly in autumn or winter, sometimes in large bands or even flocks, as in 1754, 1763, 1793, 1805, 1814,

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or not. The species has been many times noticed as seen in various parts of England, and, though observers may in some cases have been mistaken, the records deserve mention. The first of them relates to a bird watched for some time through a telescope near Bridgewater in the autumn of 1805, by Mr. Anstice, whom Montagu regarded as an accurate observer. The second bird was observed in Netherwitton Wood, in the autumn of 1819, by Admiral Mitford, the coadjutor of Selby, who records the incident. The third was seen on the banks of Hooe Lake in the parish of Plymstock by the late Mr. Thomas Bulteel, as Mr. Rodd informed the Author. Newman (Letters of Rusticus, p. 159) notices two seen in Surrey—one closely watched by Mr. R. Haines in Peperharow Park, the other by Mr. W. Kidd near Guildford. Mr. Rowe (B. Devon, p. 28) is pretty sure he saw one near Saltram in October, 1862, and Mr. T. C. Melville says (Zool. s. s. p. 3689) he saw one near North Petherton in Somerset, August 4th, 1873 ; while the late Lord Tweeddale told the Editor of one supposed to have been seen at Yester in East Lothian in December, 1876.

* Mr. R. Gray, who in 1869 examined this collection in the Peterhead Museum, could find no trace of the specimen. The statement, like many others touching Zoology in the same compilation, very possibly originated in a mistake. Macgillivray is frequently said to have asserted that the specimen he described was also killed in Scotland, whereas he did nothing of the kind.

1821, 1822, 1836, 1844, 1847 and 1868—the year 1844 being especially remarkable in this respect; but little or nothing had been ascertained in regard to its breeding-habits or its home, for nearly all of those that came into the hands of Ornithologists were evidently stragglers, and were perhaps wanderers from afar. Great curiosity was therefore felt for the discovery of its true haunts and habits, and even now, as will immediately appear, that curiosity cannot said to be satisfied, though a laborious monograph * of the species, recently published, clears up much that had been hitherto obscure, by compendiously bringing together nearly all the information that could be obtained on the subject, and has been freely laid under contribution in the following pages.

During the breeding-season the Nutcracker undoubtedly prefers retired forests in which conifers prevail, if they do not grow alone, and as in Central and Southern Europe such forests only exist in mountainous districts, the belief arose that mountainous districts were needed to afford the species a fitting abode. But this is not wholly true, and it will be found as much at home in the woods of Southern Scandinavia—in Dalsland and Bornholm, where there are no hills of great height—as in those which clothe the rugged sides of the Alps or other notable ranges. But the particular spots which it chooses for the business of propagation are of comparatively small extent, though they occur discontinuously over a great part of Europe, and we may hence conclude that, notwithstanding the success of recent researches, there is yet much more to be learnt of the Nutcracker's economy. The older accounts of its mode of nidification have proved to be mere suppositions and very wide of the mark. Among them, however, there is only

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* 'Der Tannenheher (*Nucifraga carvocatactes.*) Ein monographischer Versuch von Victor Ritter von Tschusi-Schmidhofen.' 4to, Dresden [1874]. Herr Vogel's able paper, "Die Fortpflanzung des Tannenhähers in Jura Solothurns" in the 'Bericht' of the Natural History Society of St. Gall for 1871–72 (p. 156) contains much of interest. The excellent account of this species in Mr. Dresser's 'Birds of Europe' includes copious extracts from both these works as well as others of hardly less importance.

need here to note the statement (since it found a place in former editions of this work, and has been repeated by compilers who have thence drawn their sole information) that it nested in holes of trees, which like Woodpeckers it excavated or enlarged for its purpose. That such a site may yet be found cannot be denied, but hitherto all the Nutcrackers' nests, which the zeal and care of ornithological explorers (now not a few in number) have discovered, were placed on the boughs of trees, at a height of about twenty feet from the ground. It is possible that in some cases the birds themselves had not built the whole fabric, but had availed themselves of an older structure which they had repaired and adapted to their own use. It is now admitted that Thienemann was the first to obtain a nest of this species, but the year in which he did so is not known, and that the late Abbé Caire in 1846 was the first to procure its eggs, though no record of either fact was published till long after. Even then so great was the prevalent uncertainty that grave doubts continued to be expressed by the best-informed ornithologists.* The chief reason why the nest and eggs of the Nutcracker remained so long unknown seems to be that, noisy and obtrusive as it is for a great part of the year, it becomes, like the Jay, silent and beyond measure shy as the pairing-season approaches. In very early spring, ere the snow has fallen from the trees or melted on the ground, and the forests it frequents are yet difficult of access, it begins to prepare its nest, and its full complement of eggs is laid, and the young are often hatched, amid all the rigours of winter. In Switzerland four nests have been found on the same 10th of March, each with four eggs, and in Bornholm the young have been taken on 9th April. Yet one instance is on record of eggs being unhatched on the 17th of that month. Locality seems hardly to affect the time of breeding, and the period of incubation, which is said to be performed by the hen-bird only, has been surmised to be from seventeen to nineteen days.

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* As regards our countrymen these doubts only began to be dispelled in 1862, when a Nutcracker's nest and fledgeling, obtained in Bornholm by HH. Erichsen, Fischer and Theobald, of Copenhagen, were exhibited at a meeting of the Zoological Society (P. Z. S. 1862, p. 206). In the following year the gentlemen just named found in the same wood, and the produce it would seem of the same parents, a nest with newly-hatched young, and in 1864, three nests with eggs, one set of which they with the greatest liberality transmitted, as they had the first nest and one of its tenants, to the Editor (*op. cit.* 1867, p. 162). In 1862 also the discovery of Herr Schütt, of which more presently, was made known to English readers (Ibis, 1862, p. 365).

Many nests of the Nutcracker have now been described, but there seems to be no essential difference in their construction. One in the Editor's possession is five or six inches in thickness with an outside diameter of about a foot and six inches across the interior. It is composed outwardly of sticks and twigs of larch, spruce and birch, all, as the swollen state of their buds shews, freshly plucked, as is also the grass with which it is thickly lined. A few bits of moss and lichen are present, but they seem rather to have adhered to the other materials than to have been intentionally added. In some nests a considerable quantity of earth or rotten wood underlies the lining, which occasionally consists of hair-like lichen. The eggs, generally four but not unfrequently five in number, are white, slightly tinged with bluish-green, sometimes nearly spotless but usually sparsely freckled with pale olive- or ash-colour, though occasionally these markings are numerous and pretty evenly distributed over the whole surface. In size they measure from 1·38 to 1·26 by from ·97 to ·93 in.*

Taking in order the European countries in which the Nutcracker is known to be indigenous we may begin with Norway, though here details are meagre. Herr Collett says (Norges Fugle, p. 28), on the authority of Pastor Schübeler that it bred several times between 1840 and 1848 near Porsgrund, and according to Dr. Printz that a nest was found in 1854 at Land on the Rands Fjord—but no specimen of the nest or egg, if taken, seems to have been preserved or described from either locality. As regards Sweden Dr. Baldamus is said to have received in 1850, from Scania, what subsequently appeared to be a true egg of this bird; but the first identified nest, with small young and fragments of egg-shells, was sent in 1868 from Hesselskog in Dalsland to Herr Stenström, who in succeeding years got three more nests with perfect eggs, while in 1872 Herr Meves received a nest with eggs from Wermland. In 1862 and the following years the Danish island of Bornholm furnished HH. Erichsen, Fischer and Theobald with the reward they had been so long seeking and so well deserved.* In Germany an empty nest, found by Thienemann in the Riesengebirge many years ago and exhibited in the Museum at Dresden, is believed, as before stated, to be the first authentic example ever seen by a naturalist. According to Hintz (J. f. O. 1861, p. 469) a nest was found in the Bütower district of Pomerania in 1860, and in 1862 Herr Schütt obtained three nests near Waldkirchen in Baden,* while in 1868 a nest was found in the Nedlitzer district of Anhalt, an egg from which came into Dr. Baldamus's possession. In Austria, according to Herr Grill (Verh. k.k. z.-b. Ver. 1858, p. 427), a nest with young was found in 1858 in the Langbaththale on the northern slopes of the Höllgebirge. The reports of nests obtained in Hungary by Petényi have been deemed unsatisfactory, but an egg obtained by Herr Bielz from the South Carpathian mountains and sent in 1847 to Dr. Baldamus, from whom it passed into the Editor's keeping, seems to have been correctly assigned to this species. In Styria the eggs from two nests, found in 1867 on the Hochanger Alp near Bruck, were sent by Dr. Füster to Seidensacher, after whose death others were transmitted from the same locality to various collectors, and in 1871 the Ritter V. von Tschusi-Schmidhoffen himself, and Dr. Hanf, took each a nest on the Sirbitzkogel, at the height of 4500 to 5000 feet above the sea, while two other nests were taken the same season by Dr. Füster near Bruck. In

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* The caution of the late Mr. Hewitson in refusing to figure supposed eggs of this bird has been amply justified by the fact that those offered to him, as shewn by the description given of them, clearly belonged to some other species. The first representation of a true Nutcracker's egg seems to be that by Bædeker (Journ. für Orn. 1856, Taf. i. fig. 1), but it is not good. The only trustworthy figure published in England is Mr. Smit's (P. Z. S. 1867, pl. xv. fig. 2).

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* See foot note on page 334.

Tyrol Herr Franz obtained no less than five nests at Schlanders in 1864. At Tiefenkasten in the Grisons in 1867, Dr. Baldamus himself found two nests with fledged young and a single egg, and six more nests were taken between 1868 and 1872 in the Jura of Soleure—five of them by Herr G. Vogel of Zürich. To France however belongs the merit of the earliest discovery of the eggs of the Nutcracker, for it was near Sanières in the department of the Lower Alps that Caire, as before said, obtained its eggs in 1846, and from him specimens reached Dr. Baldamus in 1848, while others came later, through his means, to Bædeker and several German oologists, as well as one, taken in 1858, to the Editor. There is no doubt that many other localities in Europe, from Russia to Sardinia (where Lord Lilford received positive assurance of its breeding) and possibly Spain—since it has been obtained in Estremadura—serve the Nutcracker as nesting-stations, but the evidence above adduced may here suffice, and any that is less positive be omitted for the present.

The young are fed partly on insects, which in summer and autumn form with snails the chief diet of the adults also, but, as winter comes on, the berries, nuts and seeds of forest-trees become their staple sustenance, and whenever these become scarce in the native haunts of the birds, they wander far and wide in search of food, so that they occur irregularly in most parts of the continent, though no examples have yet been observed in Greece, Turkey or the Crimea. The Nutcracker doubtless breeds in the forest-districts of Siberia, for the young have been seen in the far east of that country. It also occurs in Kamchatka, Northern China and Japan.

The flight of this bird is commonly said to be laboured and only unwillingly prolonged in the open, yet Dr. Radde states that he has seen small flocks rising and circling aloft till they were almost out of sight, and then dropping suddenly, one bird after another, to a tree-top, whence they would, after a short time, renew their practice—much it would seem after the manner in which Rooks perform their strange aerial sports before described. Among trees the

Nutcracker is said to be very active, and, while on the wing, to pluck the cones or nuts from the smaller boughs. It then repairs to a larger branch and there, holding its booty fast to the perch with one foot, skilfully picks out the seeds from the former, or hammers the latter with its beak till the shell is cracked and the kernel exposed.* But it also gets a great deal of its living from the ground, and the Author was told by the late Mr. Dann that, at his residence in the south of Sweden, he had watched family-parties of six or seven Nutcrackers busily picking off and turning over the moss and lichens growing on rocks for the sake of the insects to be found beneath. The ordinary note of the species is described as sounding like *crāh, crāh,* or *crŭ, crŭ,* but when alarmed it has a harsh cry which, by many, is compared to that of the Mistletoe-Thrush, and the hen when being fed by her mate utters a soft crooning noise. Many persons have remarked on the resemblance of this bird's habits to those of the Jay. The old notion of its affinity to the Woodpeckers seems to have originated with theorists, and, while not borne out by those who have seen most of it when alive, is absolutely refuted by its purely Corvine structure when examined after death.

The beak is blackish horn-colour: irides brown: lores and nasal coverts dull white; top of the head uniform umber-brown; sides of the head, neck, scapulars, lesser wing-coverts, and all the lower plumage to the vent, dark clove-brown, each feather tipped by a white spot varying in shape from linear on the head and throat to guttiform on the back and sub-triangular beneath; greater wing-coverts and remiges blackish-brown, some tipped with white, and most of them glossed with bluish-green and purple on the exposed surface, the sixth and seventh primaries having a white patch on the inner web; rump uniform dark clove-brown; upper tail-coverts umber-brown occasionally tipped with white; tail-feathers blackish-brown, glossed with green, and exhibiting indistinctly the barring so characteristic of the family, the middle pair narrowly, and the rest conspicuously, tipped with white, which occupies more space on each feather approaching the outside, but is subject to much individual variation as to extent; lower tail-coverts pure white: legs, toes and claws, black.

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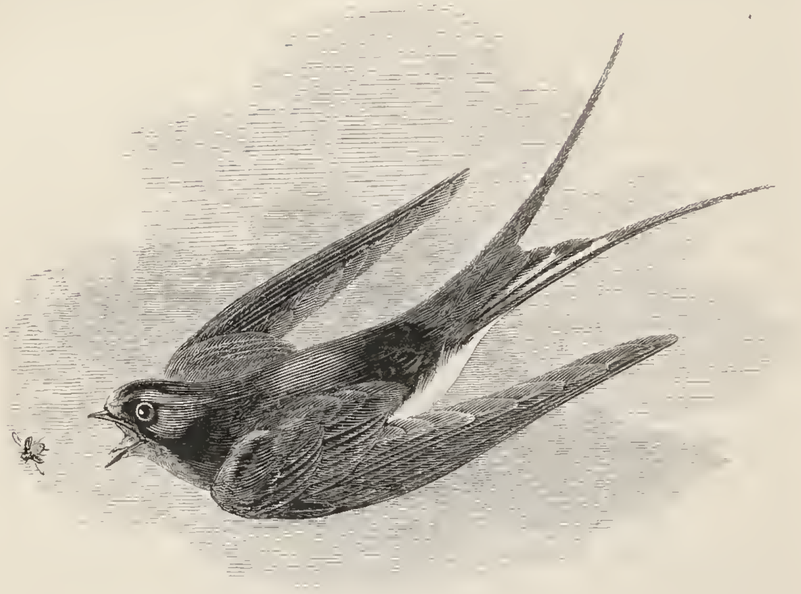
* The Author however noticed that a Nutcracker in the Zoological Gardens was unable to crack nuts. Possibly the bird had only a smooth perch, which, besides being an unsuitable anvil, would not afford it a steady foothold. Mr. Hancock has some interesting notes on the habits of one in confinement (Trans. Northumb. and Durh. vi. p. 39).

The whole length varies from twelve inches and three-quarters to fifteen and a quarter. From the carpal joint to the end of the wing, six and seven-eighths to seven inches and three-quarters; the first primary is about an inch and a half shorter than the second, which is three-quarters of an inch shorter than the third; the fourth, fifth and sixth about a quarter of an inch longer than the third.

The sexes do not differ outwardly. In the breeding-season many of the white spots disappear or lessen, through the wearing off of the feathers at the tip, and the brown of the whole plumage becomes lighter. The nestling much resembles its parents, even to the gloss on the wing-feathers, but its colours are much less pure and distinct—the brown being sooty, the spots larger and of a dirty white, and the lower tail-coverts are smoky-white.

The difference in the length of the bill (which varies from 2·2 to 1·7 in.) first noticed by Klein in examples of the Nutcracker has led some to suppose that we had in Europe two species—to the shorter-billed of which, presumably from Scandinavia, the name *Nucifraga brachyrhynchus* was applied; but the best authorities are now persuaded that no specific distinction can be made out, and that the length of the bill does not depend upon locality. There is however some ground for thinking it a sexual character, for males seem to have this feature longer than females, and the case of the New-Zealand "Huia" (*Heterolocha*, formerly called *Neomorpha*) has been cited as analogous. In the latter bird, now said to belong to the *Sturnidæ*, the difference, which is much greater than in the Nutcracker, certainly is sexual, but the male has the short and the female the long bill.



Hirundo rustica, Linnæus.*

THE SWALLOW.

Hirundo rustica.

Hirundo, *Linnæus*†.—Bill short, depressed, and very wide at the base, commissure straight. Nostrils basal, oval, partly closed by a membrane. Wings with nine primaries, long and pointed. Tail deeply forked, of twelve feathers, the outermost greatly elongated and abruptly attenuated. Legs and feet slender and bare, toes rather long, three in front, one behind; claws moderate.

"The swallow," says Davy, in his 'Salmonia,' "is one of my favourite birds, and a rival of the nightingale; for he cheers my sense of seeing as much as the other does my sense of hearing. He is the glad prophet of the year—the harbinger of the best season: he lives a life of enjoyment amongst the loveliest forms of nature: winter is unknown to him; and he leaves the green meadows of England in autumn, for the myrtle and orange groves of Italy, and for the palms of Africa." This is a brief, but a true outline of the Swallow's history, told in detail by so many authors,* but by none with greater success than by Gilbert White, whose monograph of the species and of what were then deemed the other British *Hirundinidæ*, as regards this country, exceeds in minute accuracy the accounts given by all others, most of which are overladen by a mass of nearly useless observations.

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* Syst. Nat. Ed. 12, i. p. 343 (1766). † *Loc. cit.*

The Swallow is known to all as a periodical visitor to Europe, and more records are preserved of its first appearance in spring, than of that of any other bird. These seem to give the first week of April as the average time of its arrival in this country, but it takes several days—how many cannot be stated—to reach the northern parts of our island, while the lapse of a fortnight may be safely reckoned ere the great body of returning wanderers begins to follow the first comers, and the influx continues for at least a month. In looking for the Swallow's appearance it must be borne in mind that certain spots in nearly every district are yearly visited some days sooner than other places, even in close vicinity.† The spots so selected are not always the most sheltered, and indeed differ apparently in nothing from the surrounding country, yet they must possess some advantages, possibly as regards the supply of food, or perhaps of a kind at which we can hardly guess. The character of the season must also be taken into consideration, but this seems to have far less influence than is commonly supposed, though it often affects the birds most disastrously after they have reached this country. Unlike most of our spring visitors, the *Sylviidæ* especially, the males of which usually precede the females by some days, the Swallow generally comes to us in pairs, though several or many pairs may be in company, and where a single bird only is seen the presumption may be fairly entertained that it has lost its mate through some accident of travel.

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* Mr. Ruskin is one of the latest writers who has taken this bird for his theme, and he has discoursed upon it with his wonted force of expression. Unfortunately an imperfect knowledge of facts renders his eloquent essay (Love's Meinie, Lecture 2. The Swallow. Keston : 1873) as ridiculous to the expert as it is misleading to the tiro, while the charge lodged against the Author of the present work will be seen by every ornithologist, who is also a French scholar, to be utterly groundless.

† This is true of nearly all migratory birds, and is one of the chief causes that invalidate so many of the countless published records of their supposed first appearance, since casual observers are seldom aware of the fact, and few of those who regularly watch the arrival of our visitors make allowance for it.

Arrived in this country the Swallow at once attaches itself to the habitations of man, mostly preferring such as are near water since they probably supply more plentifully the winged insects on which it almost solely subsists.* These are sought in the air nearly all day, for the power of flight this species enjoys enables it to remain on the wing for hours in succession with little apparent fatigue. It is one of the earliest birds to awake in the morning and few are so late to take rest. Towards the end of April or the beginning of May, should the season be favourable, the site of the nest is chosen, and in most cases resort is had to the place that in former years has served the same purpose, the old structure, if still remaining, being repaired and refurnished. In many parts of the country the nest is frequently built inside a chimney, at some five or six feet from the top, advantage being taken of any irregularity of surface to obtain support for the foundation; but in other districts such a situation is rarely or never selected, and the Swallow will establish itself in the disused shaft of a mine, or an old well, while sheds, barns, or any buildings with open roofs, to which access can be constantly obtained, are almost everywhere occupied, the nest being then commonly placed on a wall-plate, girder or any horizontal beam. A favourite site is afforded underneath bridges of wood or iron, as well as clock-turrets, and, though much more rarely, the nest may be built beneath the eaves of a cottage. So familiar is the bird with man, that it will often enter inhabited houses, if a window always kept open, a broken pane of glass, or a perforated shutter give it free admission, and begin its nest on a shelf, ledge or any projection that may serve as a buttress, for without some such inducement the little mason seldom commences its operations. Many more exceptional sites used by the Swallow have been observed—a bracket, a picture-frame and a bell-crank among others. A nest built on the wings and body of a dead Owl, hanging from a rafter in a barn, as mentioned by White, was long preserved in the Leverian Museum, and afterwards became the Author's property,* while an instance almost exactly similar is recorded by Thompson. The half-open drawer of a table, and the loop of a chain in a boat-house, have equally given the needful accommodation, as well as ships, from Cleopatra's galley (according to Plutarch) to the steam-tug of our own times, if we may believe newspaper stories; but perhaps the most unwonted site known to have been chosen was on the bough of a sycamore hanging low over the moat, at Penshurst in Kent, in 1832, as represented in the vignette from a drawing by Mr. Cooke, R.A., executed at the request of Mr. Wells of Redleaf. Blyth states that he had known an instance of this species building in a hole of a tree, about thirty feet from the ground. Couch says (Mag. N. H. v. p. 735) that he had seen it visiting a cave near Polperro in such a way as to suggest its using the place for breeding, and Mr. Edward asserts (Zool. p. 6842) that it breeds on the Banffshire coast wherever there is a suitable cave or projecting rock; but confirmation of each of these statements is desirable, since no similar instances seem to have presented themselves to other observers in the United Kingdom or indeed in Western Europe.

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* In the spring Swallows seem to feed almost exclusively on gnats and crane-flies, but in summer small beetles are very largely taken.

Wheresoever placed, the nest is formed of small lumps of moist earth, which the bird may be seen collecting on the ground at the water's edge, and tempering (it is believed) with its saliva. These are carried in its bill to the chosen spot, there to be modelled with short straws and sticks into the required shape, which is generally that of half a saucer, but varying somewhat according to the peculiarities of the site. In many cases a rim only of this mason-work, which as it dries quickly hardens into a crust, is needed, and the lining, consisting always of feathers, commonly caught as they drift in the air, and fine grasses, then rests on the bare wall or wood that forms the base of the nest. The eggs are from four to six in number,* of a translucent white, boldly blotched and speckled with ashy-grey and orange-brown deepening into black, and measure from ·9 to ·72, by from ·56 to ·52 in. Two broods are reared in the season, the first being usually fledged by the end of June, and the second by the end of August. While the hen is sitting the cock is assiduous in waiting upon her, frequently pausing in his flight to perch on some place within sound of her, and thence warbling in a soft and sweet strain. The song is also often uttered on the wing, but on any alarm is at once changed to a sharp and angry note, which may perhaps be syllabled *feetafeet-feetafeetit*, and is quickly taken up by all other Swallows that are near, when the assembled band will unite to drive off the intruding cat or hawk, by bravely and repeatedly dashing at the marauder, glancing upward to avoid its clutch after each assault.

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* The Editor was told by Mr. Yarrell shortly before his death that this historical specimen was still in his possession, but at the sale of his effects it was not forthcoming. White says that the Owl and its burden being brought away, a conch-shell was fixed in the same place and the next year a Swallow's nest was built in it.

On the young first leaving the nest they scramble or flutter to the chimney-top or to an adjacent roof, where they sit and are fed by their parents. Their next essay is to reach some leafless bough, whence at intervals they make excursions in the air of gradually increasing length, but continue to receive their food as before. Soon after they take more boldly to the wing; but, still unable to earn their own living, they accompany their parents in the search of prey, and when enough is collected, young and old at a signal advance to each other, rising in the air, so as to meet and transfer a mouthful from the latter to the former, which accepts it with a note of gratification.

The early broods when able to shift for themselves spread over the country, and as the season advances collect in vast numbers about pools or rivers, feeding on the swarms of insects there generated, and roosting by night in the trees, reeds and rushes that fringe the banks, while their parents stay about their home and busy themselves with the cares of a second family. When the second broods are hatched and flown they are led to the parts frequented by their predecessors, who by that time are strong on the wing, and at the end of August or beginning of September, quit this country, leaving behind their parents and younger brethren to follow when the latter are fit, which commonly happens about a month later. Yet a good many still tarry, and not a year passes but a few Swallows may be seen here and there throughout November, while the records of the appearance in December, even to the 23rd and 24th of that month of birds, too weak, it would seem, to perform their journey, are far too numerous to be here particularized.* But it very rarely happens that any occur in Britain during the two months that follow. Yet Mr. Job Johnson says (Zool. p. 1619) that he saw three near Wakefield, January 18th, 1837, and Thomas Forster (Observ. &c. p. 456) that one appeared at Clapton, January 29th, 1809. Mr. Parke recorded (Zool. p. 7938) one near Halifax, February 4th, 1862. Graves states (Nat. Pocket-Book, p. 63) that he saw one February 7th, 1817. Mr. Gurney, junior, saw at a bird-stuffer's one said to have been taken at Southampton, February 26th, 1871, and Messrs. Matthews report (Zool. p. 2534) three occurring February 28th and 29th, 1846, in Oxfordshire. If there be no error in any of these observations, only one of which was confirmed by capture, the birds seen had possibly wintered in this country, for few spring-arrivals are recorded earlier than the third week of March.

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* Lister informed Ray of a Swallow that laid nineteen eggs successively (Willughby's 'Ornithology,' Engl. ed. pref. p. 9).

The migrations of the Swallow are in a direction nearly due north and south, and their course has been satisfactorily traced across the Mediterranean to and from Africa. A few

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* Among others, the case mentioned by White in his twenty-third letter to Pennant; but, from the Editor's experience, even "a very respectable gentleman" may be deceived in a matter of this kind, and too much trust should not be placed in the observation of White's informant.

Swallows, as Canon Tristram reports, winter in the oases on the northern verge of the Great Desert, but by far the larger number unquestionably go much further, though whether the birds (undoubtedly of our own species) which occur so abundantly between November and February at the Cape of Good Hope and elsewhere in South Africa, are individuals of British birth is as yet unknown. It is however certain that they do not breed either there or along the West Coast of Africa, where they are also very abundant during the time they are absent from us, and it is also certain that at this season they moult,* so that when they return to their northern home they are in the fullest perfection of plumage.† Their passage seems generally to be effected as much as possible overland, but observations are not wanting to shew that at times their ordinary course is deflected seawards,‡ and when this is the case, they no doubt suffer extremely, arriving at their destination (if they do reach it) in a very exhausted state, due possibly as much to hunger as to fatigue. They have been not unfrequently seen to alight on the water, and presently to fly off again, while there are many notices of their settling in crowds on ships.

The Swallow is common in summer throughout nearly all the British Islands, but it does not seem to breed on the Outer Hebrides, though it occurs there every year, as it does also in Shetland (where however its nest has several times been known), the Færoes, and Iceland. It has been once observed in Spitsbergen (Ibis, 1875, p. 272), and Mr. Gillet saw a pair in Nova Zembla (*op. cit.* 1870, p. 306). Herr Nordvi is said to have found it breeding in East Finmark; but it can hardly be deemed much more than an occasional straggler in Scandinavia beyond lat. 68° 30′ N., though below this line it is common enough in Lapland. It is widely distributed throughout Russia from Archangel southward, and Western Siberia; but its eastern limits are very imperfectly traced. Mr. Seebohm found it common enough at Jennisaisk, and examples from China and Japan, though presenting some slight modifications, are assigned to this species by Mr. Dresser, who remarks, however, that "as one moves eastward it will be observable that there is a general tendency in specimens to diverge from the typical European form towards *Hirundo horreorum*, the species which inhabits the Nearctic region; and in Eastern Siberia, near Lake Baikal, specimens of this latter form are found in no way differing from typical American examples." The same excellent authority is disposed to think that Mr. Gould's *H. fretensis* from North Australia is identical with *H. rustica*, and he has examined specimens of the latter from several islands in the Malay Archipelago, the Andamans, Ceylon and many places in India. Our Swallow, therefore, taking also into account its appearance throughout Africa, has a very wide range, but it must be understood that all the southern localities are but its winter retreats, and it is to be remarked that most of these localities are the home of some species of Swallow more or less resembling our own, which is either wholly stationary or much less migratory than *H. rustica*.

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* This fact seems first to have been ascertained from birds in captivity by Mr. James Pearson, and communicated by Sir John Trevelyan to Bewick who published it in 1826.

† Some very important points on this matter were clearly put forth by Messrs. Sharpe and Dresser (Proc. Zool. Soc. 1870, pp. 244–249).

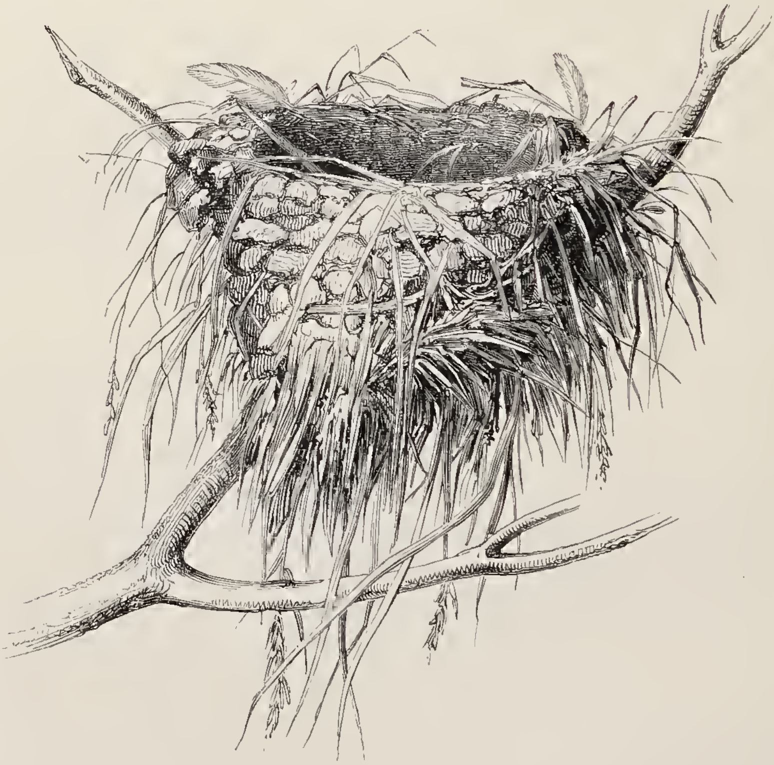
‡ They only occur accidentally in the Atlantic Islands.

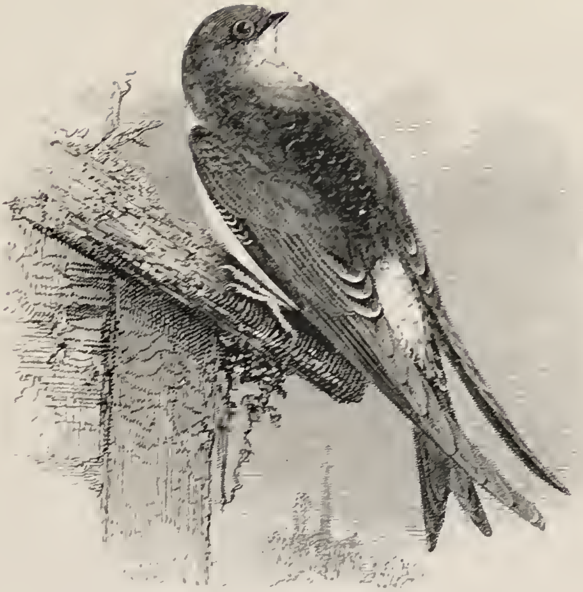
In the adult male on arrival in spring, the bill is black: irides hazel: forehead chestnut, rest of the head and all the upper parts shining steel-blue, the feathers of the back being white at the base; wing- and tail-quills black, glossed with bluish-green, the middle rectrices wholly so, the rest of them with a white patch on the inner web, nearly round on the pair next the middle, but gradually elongated on the others till, on the outermost, it becomes a diagonal stripe; the chin and throat chestnut, followed by a broad thoracic band of black glossed with steel-blue; the rest of the lower surface warm buffy-white, deepest in tint about the vent; lower tail-coverts occasionally with a black shaft-streak: legs, toes and claws black.

Whole length eight inches and a half, of which the outermost tail-feathers measure nearly five inches; the wings reaching three-quarters of an inch beyond the end of the second tail-feather; from the carpal joint to the tip of the wing, five inches; the first and second quill-feathers nearly equal, but the first longest.

The female has less chestnut on the forehead, the upper surface generally not so glossy, the dark thoracic band narrower, the lower parts less tinged with buff and the belly nearly white, while the outermost tail-feathers are also shorter.

The young on leaving the nest have the forehead, a line over the eye, and the chin, pale chestnut, the thoracic band dull black, but faintly glossed and the upper parts generally are much less bright, while the white spots on the tail-feathers are tinged with rufous. The outermost tail-feathers do not acquire their full length till after the first moult.





CHELIDON URBICA (Linnæus*).

THE MARTIN.

Hirundo urbica.

CHELIDON, *F. Boie.*†—Bill short, depressed and very wide at the base, commissure slightly decurved. Nostrils basal, oval, partly closed by a membrane and opening laterally. Wings, with nine primaries, long and pointed. Tail forked, of twelve feathers, the outermost not abruptly attenuated. Legs and feet slender, closely feathered above, toes rather long, three in front, one behind, claws moderate, sharp.

THE spring-appearance of the Martin in Europe is usually some days later than that of the Swallow whose habits its own in many respects closely resemble, but the former does not with us attach itself so exclusively to buildings as does the latter, and though it is often observed to be more numerous in towns than the Swallow, the Martin yet retains in this country some of its original seats, for it still chooses its breeding-place in cliffs, generally on the coast, but sometimes inland, and quite apart from any human habitation.

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* *Hirundo urbica*, Linnæus, Syst. Nat. Ed. 12, i. p. 344 (1766).

† Isis, 1822, p. 550.

Its nest also, though constructed of the same materials as the Swallow's, is of a very different shape, the mud-walls being raised to meet and be partly borne by the shelter under which it is built, leaving only an opening sufficient for entrance and exit. Furthermore the nest never seems to be placed within a chimney or room, but is either fixed beneath a porch or archway or on the outside of a building, most commonly under the eaves, and not unfrequently in the upper corner of a window—sometimes even resting partially against the glass. Its shape is approximately that of the half or the quarter of a hemisphere, but never hemispherical as has so often been said. Built as it almost always is without any prop to support its weight, its foundations require no ordinary care, and a week or more is often occupied in laying them, after frequent trial of various spots—the builders clinging to the wall by their feet and assisting themselves with their tail to retain their precarious hold, while depositing the materials which as just said, are similar to those used by the Swallow and are collected in the same way. Moreover the nest is at first very gradually constructed, the lower layers of mud being left to dry and harden before more are added. When the base is become firm, the remainder is often finished with great rapidity, and the interior, being furnished with feathers and a few bents or fine straws, forms the nuptial couch of the owners who frequently occupy it at the same time.*

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* The curious and rather ludicrous mistake of an eminent French biologist must here be noticed since it has led other ornithologists astray. On March 7th, 1870, the late M. Pouchet announced to the French Academy of Sciences (*Comptes Rendus*, lxx. p. 492) that within the last half-century some of the "*Hirondelles*" of Rouen had wholly changed their style of architecture, adapting it to that which had been lately introduced by man. In the new part of the city he observed that their nests were built on a very different (and, as seemed to him, an improved) plan from that which was still followed in the older part. Hence he inferred that the birds possessed greater intellectual faculties than had been thought, since they were able to avail themselves of the advance of civilization. But the simple explanation of a circumstance so extraordinary was not long delayed, for on July 4th, of the same year, M. Noulet was able to shew that his distinguished predecessor had been a little hasty. It was true, said he (*op. cit.* lxxi. p. 78), that the nests in the two parts of the city differed as had been described, but then the one belonged to *Hirondelles de*

The Martin sets about breeding very soon after it returns to us, and a nest which has outlasted the winter's storms is almost at once reoccupied; but if a new nest needs to be built the operation is often greatly retarded by the inclemency of the season and various accidents to which the rising edifice is liable. Indeed both this species and the Swallow seem dependent in this as in some other respects on the weather, for any excess of wet or drought renders the collection and preparation of building-materials more difficult, while the Martin's work is so exposed that heavy, driving rain will often wash it away. Then too, when all is happily ended, there is the frequent eviction of the owners by House-Sparrows, as already (page 91) related, and, even if retaliation be ever made in the way that has been asserted, delay is not thereby avoided. Martins are much more social than Swallows, and their nests are not uncommonly built to touch one another in a long row under eaves in a favourite locality. Yet this is a sight now not often seen, for several good observers have remarked that the Martin is less plentiful than formerly in England, though the Editor is inclined to believe that its numbers, which in his experience had certainly diminished, have within the last three or four years somewhat increased.

The eggs, four or five in number, of a pure translucent white, measure from ·83 to ·75 by from ·54 to ·5 in. Incubation lasts thirteen days. The young are at first fed within the nest, but on growing older thrust their head out of the opening to receive the nourishment brought them by their parents who cling to the outside while feeding them. Two broods are almost invariably brought forth from the same nest in the course of the season, and not unfrequently a third, the hen beginning to lay again so soon as each is flown. Jenner states (Phil. Trans. 1824, p. 25) that, at Berkeley in 1786, a pair of Martins hatched four broods, but the latest, when about half fledged, perished in the nest in the middle of October, and the parents returning to it the following May threw out the skeletons.

fenêtre, our House-Martins, and the other to *Hirondelles de cheminée*, our Chimney-Swallows! (*Cf.* Ann. N. H. ser. 4, v. p. 307, vi. p. 270.)

The fact that the latest broods of Martins commonly die in the nest has been very often observed, but the cause of it is by no means clear, notwithstanding the attention paid to the subject by Mr. Blackwall (who, in his ‘Zoological Researches,’ has some interesting observations upon it) and others. We can hardly believe that the strong natural affection of the parents suddenly gives way to the instinct of self-preservation, and that they voluntarily leave their offspring to starve in the hope of saving their own life by a timely retreat. Yet, if this supposition be rejected, we seem to have but the alternative of thinking that the supply of food may all at once fall short in the neighbourhood of the nest, and that the old birds have to seek it at such a distance that the delay in taking it to their young is the cause of the latter's death.* In this case there would be no desertion on the part of the parents, and it could not be objected to this explanation that the parents would suffer in like manner, since they, finding their progeny dead from the temporary want of food, would naturally depart and in an hour or two be in the midst of plenty. Considering the extreme suddenness with which many kinds of insects appear and disappear, there would seem to be no reason why the suggestion here made should not be correct, and the suddenness with which Martins and Swallows often vanish would also be explained.†

About the middle of October nearly all the Martins that are able to travel leave this country, but it must be understood that the earlier broods have generally taken their departure some six weeks or a month sooner, since, as with Swallows, these earlier broods for the most part quit their birth-place and resort to localities affording greater supplies of food. The assemblages, whether commingled or separate, before emigrating have long been noticed, and since the extension of telegraphs throughout the country perhaps attract still more attention, as the flocks, often consisting of many hundreds, find the wires a favourite resting-place, almost to the exclusion of the buildings and dead trees which formerly served that purpose, and, from their usually conspicuous position, render the congregations more easily observed. Yet considerable bodies are often seen much later, a flock of more than a hundred was noticed at Dover November 13th, 1831, and one twice as large at Barnstaple, November 17th, 1838. It may safely be said that not a year passes without Martins being seen more or less numerously in that month, and often to its end, in some part or other of England, sometimes for many days in succession, while there are many records of their appearance in the first half of December, and at least twice (Zool. pp. 2392, 6891) have they been noticed within a few days of Christmas. It must be remarked, however, that these late birds seem generally to be strangers and not the natives of the locality—all of whom have departed some weeks earlier.

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* Those who have reared young birds by hand, especially such as require an insect diet, well know that a very short deprivation of food will often prove immediately fatal.

† Mr. A. Matthews (Zool. p. 3173) records an instance in which not only the young but the parents perished, observing of the latter that "their strength visibly declined," which rather confirms the view taken above, for in this case supplies must have fallen off gradually. Had they suddenly ceased, the young alone would probably have perished, and the old birds, having no longer a tie to the spot, would have saved themselves.

The Martin is a regular summer-visitor to nearly the whole of Europe and to part of Asia. It is wanting in the Outer Hebrides, but breeds, though in small numbers, both in Orkney and Shetland. In the Færoes it not unfrequently appears, and in the north of Iceland Faber saw a pair which began to build a nest. On the continent it is abundant much further north, especially in the interior of Lapland,* and it extends to East Finmark. It breeds also at Archangel, but does not seem to appear on the Petchora. The boundaries of the range of this species and one of its eastern representatives, *Chelidon lagopoda*, cannot as yet be laid down, for Russian ornithologists have hardly recognized their distinctness. The latter however was alone found by Mr. Seebohm on the Jennisei,* but the former is said not to be rare in Persia, and though as regards India it was only known to Jerdon from one locality on the Neilgherries, Tickell records it from Moulmein (J. A. S. B. xxiv. p. 277), adding that large flocks occur in India from time to time—a statement confirmed by subsequent observers. In Arabia, Egypt and Nubia, it is only a bird of passage, and since Mr. Blanford obtained but a single specimen in Abyssinia in February, it seems to winter more to the southward. The same inference may be drawn from its being very scarce at that season in Algeria though numerous there in summer. But we know no more of its further African wanderings than that Mr. Keulemans shot an example in January on Prince's Island in the Gulf of Guinea, where he was told, says Mr. Dresser, that it had not been before observed. It seems also to be but a straggler in the Canaries and Madeira, and is not recorded from the Azores.

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* At Muonioniska in 1853, Wolley, as he wrote to Hewitson, counted from 160 to 170 nests round the courtyard of a house, though those on one side had lately fallen down. In Lapland the people almost everywhere multiply their eaves by nailing narrow planks to the walls, at such a distance that there is just room between them for the nests, which thus appear row under row. Other houses in that village and elsewhere, were in 1855, as the Editor remembers, nearly as much frequented. The cause of the bird's abundance in the country and of the accommodation so gladly given to it is not far to seek when one sees and feels the innumerable gnats.

In the adult the bill is black: the irides brown: the top and sides of the head, nape, wing-coverts and back, rich, glossy bluish-black, the feathers of the nape and back white at the base; rump and upper tail-coverts, except those next the tail which are glossy bluish-black, white; wing- and tail-quills dull black, shafts white beneath; chin and all the lower part of the body white, as are the feathers which cover the legs and toes; axillaries and lower wing-coverts pale brown: claws greyish horn-colour.

The whole length is rather more than five inches and a quarter; from the carpal joint to the tip of the first primary, which is the longest, four inches and a quarter.

There is no external distinction of sex. The young are sooty-brown above with hardly any gloss, and not of so pure a white beneath, while the tail is shorter and less forked.

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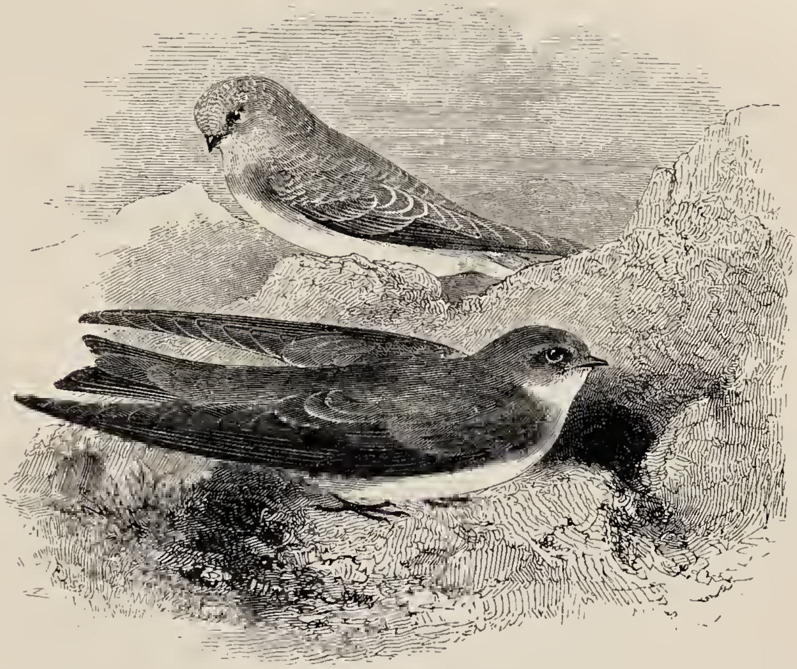
* There they attempted to build nests on the masts of his ship. Herr Holmgren (Skand. Fogl. p. 377) quotes an account of our Martin building its nest and bringing up a brood on board a steamer plying on the river Klar in Sweden.



COTILE RIPARIA (Linnæus*).

THE SAND-MARTIN.

Hirundo riparia.

COTILE, *F. Boie* †.—Bill short, depressed and very wide at the base, commissure straight. Nostrils basal, oval, partly closed by a membrane and opening laterally. Wings, with nine primaries, long and pointed. Tail forked, of twelve feathers, the outermost not abruptly attenuated. Legs and feet slender, and bare except a tuft of feathers on the tarsus just above the hallux ; toes moderate, three in front, one behind ; claws strong.

THE SAND-MARTIN is the smallest of the *Hirundinidæ* of this country, and commonly the earliest to arrive in spring ; but, not presenting itself to the gaze of men by at once frequenting their habitations, its annual return is not so regularly or so generally noticed.‡ Indeed for some time

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[*] *Hirundo riparia,* Linnæus, Syst. Nat. Ed. 12, i. p. 344.

[†] Isis, 1822, p. 550.

[‡] The Editor suspects that most of the "Early Swallows" of newspaper-para-

after it has reached us it commonly keeps pretty close to streams or ponds, over which it may be seen taking its food with the curious jerking flight, so well noted by Gilbert White, and it does not seek its breeding-quarters till towards the end of April or beginning of May.

Like the species already described, this bird comes to us no doubt from Africa, and almost always chooses its nesting-place in the banks of rivers, sand-pits, railway-cuttings, and other vertical surfaces of earth of a nature that will enable it to perforate them for its purpose. In such situations it bores horizontal galleries with a degree of regularity, and an amount of labour, rarely exceeded among birds. The mode in which these holes are made has been described more or less fully by White, Rennie, and Macgillivray's correspondents—Messrs. Duncan and Weir. When beginning its excavation, the bird clings to the face of the bank, steadying itself by its tail, and, using its bill as a pickaxe, loosens the earth, which at first falls down by its own weight clear of the hole. In doing this the bird works from the centre outwards, assuming all sorts of positions, and as often as not hangs head downwards while grasping the circumference with its claws. When the hole is carried further the same method is pursued, but the detached soil has then to be scraped out by its feet, since the gallery though generally sloping upwards from the entrance is too nearly horizontal for the earth to run out of itself. The form of the boring and its length seem to depend much on the nature of the soil. Dry, friable sand, though easily pierced, has its disadvantages in the crumbling of the sides, especially as the bird is breaking ground, till a large irregular hole is made, and then the burrow is extended perhaps to four, six, or, as one authority says, even nine feet. Harder sand, lying often in layers, produces shorter tunnels, from eighteen inches to three feet in length, with an oval or oblong section, and it is only in very tenacious soil that the

graphs are nothing but Sand-Martins, the difference in the plumage and flight of the two species, obvious at a glance to an expert, being unknown to the casual observer.

opening is really circular. The intention seems to be that the gallery should be straight, but inequalities of the ground, and the occurrence of stones, frequently cause it to take a sinuous course, and the little miner often meets with a stone too big to be removed or evaded, in which case the hole is abandoned, and a fresh attempt made. Both the partners in the undertaking seem to work at it by turn, and operations are seldom carried on except in the early morning. When the gallery is bored far enough, and what determines this is not always apparent, the end is slightly enlarged to form a chamber, and hither are brought materials for the nest, consisting chiefly of dry grass-stalks, or near the coast (as Wolley found at Bridlington) of seaweed, to serve as a loose foundation, on which is laid a bed of feathers, which seem to be collected from some neighbouring water, and these last are invariably disposed with much neatness, so that a Sand-Martin's nest, carefully removed from its grave is a beautiful object.*

The eggs are commonly from four to six in number, though late in the season not more than two or three are laid, and are translucent white, measuring from ·78 to ·6 by from ·52 to ·45 in. Since the species is pretty numerous and places fitted for its subterranean nurseries are sometimes far apart, it throngs to those that are favourable, and in such cases the nests are often made close together, so that the face of the bank is riddled with its holes, in a way that has suggested to many the comparison with a honeycomb. Depth of soil has nothing to do with the occupation of a locality by the Sand-Martin. It will drive its galleries into the middle of a bluff a hundred feet high, or be content with the thin layer of mould, hardly exceeding eighteen inches, that in some spots caps the side of a chalk-cutting. Nor is height more regarded, for the nests may be found at almost any distance from either top or bottom of a suitable escarpment, and a shallow sand-pit, that will hardly hide a boy, will serve its ends as well as a lofty precipice. It has some of the adaptiveness of its relatives. In Norway it will make its nest in the turf-roof of a hut, and in England it has been often known to breed in holes in old walls.* Dr. Norman Moore tells us, in his life of Waterton (p. 125), how that ingenious naturalist fitted more than fifty holes in a walled bank with draining-pipes, that they might form nesting-places for this species, and that the year they were completed every hole was tenanted. But perhaps a more singular case still is that, discovered by Mr. E. Bidwell (Zool. s.s. p. 5108), and confirmed by Mr. Upcher, of its breeding in some numbers in huge heaps of sawdust near Brandon.

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* Those who have dug out the nests of this bird need not be reminded of the inconvenience which the operation is likely to produce from the swarms of fleas, with which, towards the end of summer, they are infested.

The young are fed with gnats and other small insects, and, sometimes, according to White, with dragon-flies almost as long as themselves. When they leave the nest they sit for a time on any convenient perch, and are so unsuspicious of evil that they may be easily taken by the hand. A little later they fly with their parents, from whom they receive food on the wing, the act being so rapidly performed that it escaped his observant eye. Afterwards, like other species of the family, they get their own living, chiefly over the surface of water, and roost in swarms on the trees or among the vegetation at its side. The notes of this species are quite inexpressible by any combination of letters. The most ordinary is a low complacent chirp, which is quickly changed to a loud and angry cry on the approach of danger. The cock has a very gay, twittering song, commonly delivered on the wing near the nest. At least two broods are hatched in the course of the season, but the Sand-Martin leaves this country earlier than either of its allies. Towards the end of August, the numbers at its breeding-places are visibly thinned, but myriads continue to haunt the larger rivers. About the beginning or middle of September these take their departure, and by the third week of that month it is rare to see a single bird. Nor do stray examples ordinarily appear afterwards, as is so commonly the case with the Swallow and the House-Martin. Mr. W. Jeffery, however, in 1867 (Zool. s.s. p. 1033) noticed the Sand-Martin in Sussex until October 6th; Thompson mentions its having been observed at Wexford, October 31st; and, according to Kinahan (Zool. p. 6962), it occurred in the county Limerick, November 30th, 1859—the latest date known to the Editor. In spring, too, exceptional arrivals are very rare, the earliest on record being apparently that by Mr. D'Urban (Zool. p. 5098) at Exeter, March 18th, 1856, which is certainly not more than ten days sooner than its ordinary coming.

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* White mentions its breeding in the scaffold-holes of an ancient building at Bishop's Waltham, and the like has been noticed in the crumbling mortar of old walls at Godstow by two observers (Zool. p. 7844, and s.s. p. 2344)—the latter of whom, Mr. C. B. Wharton, "found a nest about a foot down a hole in the gnarled stem of an elm tree, which itself grows out from beneath the masonry." Mr. Harvie Brown in Scotland saw numbers of the species flying into and resting in holes in an old wall, though he could not be sure that they nested there (*op. cit.* p. 897), while Mr. Prior, near Bedford, had proof of the fact (Zool. 1877, p. 450).

The Sand-Martin is generally but rather locally distributed throughout the British Islands, including most of the Outer Hebrides and Orkney, but it is not known to breed in Shetland though often appearing there. On the continent of Europe it goes nearly as far as the North Cape, and thence is found across the Russian dominions to the Sea of Ochotsk, being very numerous in many places. It is supposed to have been obtained in Japan (Ibis, 1878, p. 231) and is numerous in China, but its southern range in Asia is not at all known. Mr. Davidson (Stray Feathers, vi. p. 44) found it common in winter in the Thatone subdistrict of Tennasserim, and at the same season it visits several parts of India, but not, as would seem, the southern half of the peninsula, and from Mr. Hume's experience it must be rare. Thence it is found in Afghanistan, Persia and Arabia. In Africa it had not been till lately known to reach further to the southward than Zanzibar on the east coast, though Canon Tristram, who saw a few at El Aghouat in November, thought that it did not winter in the Sahara, and Drake believed the same of it as concerns Eastern Morocco; but the receipt by Mr. Gurney of several specimens from Transvaal greatly extends its range. Mr. Godman obtained a specimen at Teneriffe.* Throughout the enormous tract of which the limits have just been imperfectly traced the Sand-Martin is pretty numerous in most suitable localities, regard being had to the time of year. But this is by no means all, for the bird is not confined to the Old World. In America it has a range quite as wonderful. Natterer obtained it at Caiçara in Brazil, and a pair was seen on Melville Island in 1820, as recorded by Parry (Journal &c. p. 195)—the distance between these two points being about 90° of latitude. It has also been observed at many intermediate stations, and is as well known throughout North America as in Europe. Dall found it breeding in immense numbers in Alaska, Richardson saw settlements of thousands at the mouth of the Mackenzie River, and Mr. Reeks records it (Zool. s.s. p. 1695) from Newfoundland, in parts of which it is said to be very common. Few species of birds have a range so extensive as the Sand-Martin, and certainly there is no Passerine bird which can compare with it in this respect.

The adults have the bill brownish-black: the irides hazel: upper parts nearly uniform mouse-colour, darker on the crown and round the eyes, and palest on the rump; wing- and tail-quills blackish-brown, the latter with lighter edges; chin, throat, breast, belly and lower tail-coverts, white, except a broad mouse-coloured band across the upper part of the breast; the axillaries, flanks and lower wing-coverts mouse-coloured, those of the latter which cover the metacarpus being tipped with dull white; the tarsal tuft pale buff: legs, toes, and claws dark brown.

The whole length is four inches and three-quarters; from the carpal joint to the tip of the first and longest primary, four inches.

Young birds of the year, on leaving the nest, have the feathers of the back and upper tail-coverts, as also the tertials and wing-coverts, tipped with buffy-white, as shewn in the upper figure of the woodcut; the chin is also buffy-white.

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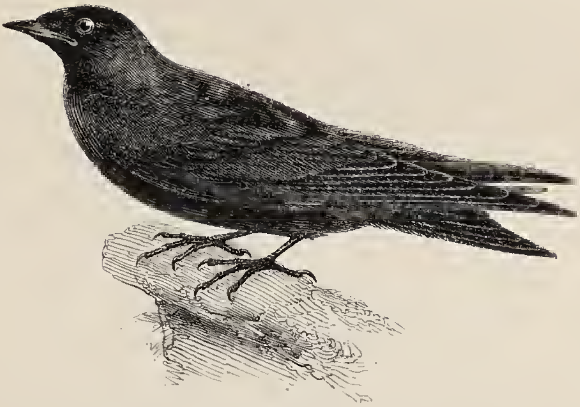
* Both in Asia and Africa our Sand-Martin has several congeners, the existence of which throws suspicion on some of the older statements as to its appearance in the south of both these quarters of the globe.



PROGNE PURPUREA (Linnæus*).

PURPLE MARTIN.

Hirundo purpurea.

PROGNE, *F. Boie*†.—Bill stout, depressed and very wide at the base, culmen and commissure much decurved. Nostrils round, inoperculate and opening upwards. Wings with nine primaries, long and pointed. Tail much forked, of twelve feathers, the outermost tapering gradually to a point. Legs and feet pretty strong, bare; toes three in front, one behind.

THE PURPLE MARTIN of America is here included on the authority of Prof. M'Coy, who, early in the year 1840, informed the Author that a female example had been lately shot near Kingstown, in the county Dublin, and a few hours after sent for dissection to the late Dr. Scouler. It was subsequently placed in the Museum of the Royal Dublin Society, which now forms part of the Museum of Science and Art in that capital, and the specimen is still preserved there, as Mr. More informs the Editor.‡

The Purple Martin is a common summer-visitor to nearly the

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[*] *Hirundo purpurea,* Linnæus, Syst. Nat. Ed. 12, i. p. 344 (1766).

[†] Isis, 1826, p. 971.

[‡] It is said that in the first week of September, 1842, two examples of this species were shot at Kingsbury Reservoir. One of them, a young bird of the year from which the above figure was taken, passed into Mr. Bond's collection. Subsequently the other specimen, an adult male in brilliant plumage, was brought to the Author. The Editor agrees with Mr. Harting (Handb. Br. B. p. 125) in thinking that Mr. Yarrell was misinformed on this subject, and has failed to get

whole of North America, especially in the interior, breeding from very high latitudes to Florida, and from the Atlantic to the Pacific. It seems to be of rare occurrence in Newfoundland (Zool. s.s. p. 1741) and was not recognized as occurring in the Bermudas until September 22nd, 1849, when a large flight of Swifts and Swallows including many of this species suddenly appeared in those islands (Contrib. Orn. 1850, p. 35).* It arrives at New Orleans from the south in the beginning of February and gradually continues its way northwards, reaching the Arctic Circle about the middle of May. Its departure takes place early. The limits of its range in winter have not been determined. It is known to arrive at that season in Mexico and Lower California, and Mr. Sclater says (Proc. Zool. Soc. 1872, p. 606) that it reaches the Rio Negro on the border of Patagonia, where Mr. Darwin and Mr. Hudson (*loc. cit.*) observed it breeding in great numbers.†

Interesting accounts of the habits of this species, which in Canada and the United States is everywhere a welcome guest, are given by Wilson, Audubon, Nuttall and other American ornithologists, but its very slight claim to be counted a "British Bird" lessens the need of entering upon them at any length. Naturally breeding in hollow trees, often in the deserted holes of Woodpeckers, it readily takes to the accommodation provided for it by those who wish to encourage it about their home, and "Martin-boxes", made expressly for the purpose, are therefore very generally set up in gardens, and near houses. The nest consists of a loose gathering of twigs, leaves and grass, intermixed with shreds of cloth, or any material the bird may chance to find, and is lined with feathers or other soft substances. The eggs, from four to six in number, are white and measure from ·99 to ·93 by from ·85 to ·65. Several pairs will breed in the same box, and they generally rear two broods in a season.

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any satisfactory corroboration of other asserted instances of the occurrence of the species in Britain.

* It seems not to have appeared there since (Zool. 1877, p. 407).

† Several ornithologists, however, consider the South-American birds to be specifically distinct, in which case those observed by the two naturalists just named are the *Progne elegans* of Prof. Baird.

The male has the whole body black, highly glossed with shining purple-blue, except a white patch on each side beneath the wing; the wings and tail are brownish-black slightly glossed with purple, which on the wing-coverts form indistinct bars: the bill is black: the irides dark: the legs and feet blackish-brown. The whole length is six inches and three-quarters, the wing from the carpal joint five inches and a half.

The female is very similar, but much duller, above, and beneath brownish-grey, which becomes lighter on the belly and crest, but the feathers of the latter have a dark shaft.*

With this species ends the account of the Order *Passeres* to be here given. Those which next follow form a heterogeneous assemblage, contrasting remarkably with the uniformity of internal structure that characterizes all the *Passeres*, however they may differ in habits and outward appearance. It does not appear desirable in the course of the present work to enter deeply into disquisitions on systematic arrangement, but it must be evident to all serious students of ornithology that the various so-called "Families" of true *Passeres* are by no means so distinct as the "Families" of the next Order. The *Hirundinidæ*, however, may fairly be regarded as a well-defined group, for, strictly Passerine as they are in every part of their structure, they are sharply separated from every other section that the ingenuity of systematists has invented—no existing form having presented itself that will ally them to any other Family.

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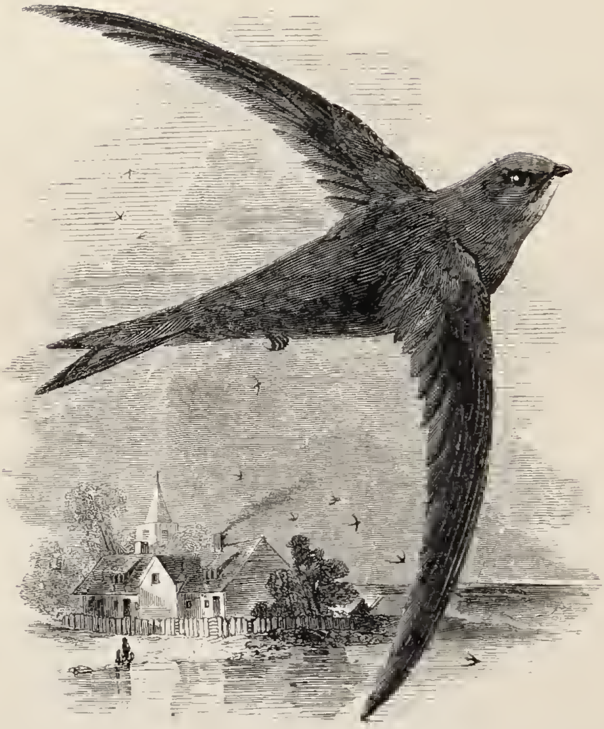
* The supposed occurrence at Derby, in 1850, of another American Swallow, *Tachycineta bicolor*, was recorded by Wolley (Zool. p. 3806), and though he, with his usual caution, was careful to remark that there was "a possibility of mistake" about the matter, there can be little doubt of the truth of the story told to him. The species at first sight somewhat resembles our House-Martin, but is easily distinguished by wanting the white rump and the feathered legs of that bird. Wolley's specimen was exhibited to the Zoological Society, February 28th, 1860, and is now in the Museum at Norwich.



Cypselus apus (Linnæus*).

THE SWIFT.

Cypselus apus.

Cypselus, *Illiger*†.—Bill very short, wide, triangular at its base and depressed; culmen and commissure much decurved; gape extending beyond the eyes. Nostrils longitudinal, the edges raised and furnished with small feathers. Wings, with ten curved primaries, very long and pointed, the first a little shorter than the second, but longer than the third. Tail, of ten feathers, somewhat deeply forked. Tarsi very short, feathered in front; toes four, all ordinarily directed forwards, the middle and outer with three phalanges only; claws short, large and much curved.

The characters which distinguish the Swifts from the Swallows are even on a slight examination so well marked and so decisive that it is curious their important bearing on

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[*] *Hirundo apus*, Linnæus, Syst. Nat. Ed. 12, i. p. 344 (1766).

[†] Prodr. Syst. Mamm. et Av. p. 229 (1811).

classification was not sooner recognized. Though so like Swallows in much of their external appearance and in many of their habits, Swifts have scarcely any part of their structure which is not formed on a different plan; and, instead of any near affinity existing between the two groups, it can scarcely be doubted by an unprejudiced person that the *Cypselidæ* not only differ far more from the *Hirundinidæ* than these do from any other Family of *Passeres*, but that they belong to what, in the present state of ornithology, must be deemed a distinct Order of Birds—and they are here included among the *Picariæ*, as before (page 267) indicated. In deference to the practice of British zoologists, who have been so long accustomed to regard the Swallows and Swifts as members of the same Family, it seems expedient in this work to place the latter next to the former, but it must be understood that they really have no relationship therewith, and that in fact, except a somewhat remote connexion with the *Caprimulgidæ*, the only true allies of the *Cypselidæ* are the *Trochilidæ*, or Humming-Birds, with which they form a group that has received from Nitzsch the name of *Macrochires*.

The Swift comes to us from Africa, arriving sometimes soon after the middle but more commonly towards the end of April, or even not till the beginning of May, the variation in the time of its appearance being possibly due to the state of the season in the countries whence it takes its departure or over which it passes on its way. Its stay in the British Islands is comparatively short, most of the birds which breed or are reared here generally leaving their home with great punctuality very early in August, though stray examples, and sometimes considerable companies, not unfrequently make their appearance during the next two months. Mr. Blackwall saw a Swift October 20th, 1815, Mr. C. Bowring sent the Author word of one seen by him near Conway, October 31st, 1855, while Mr. W. Adam records (Mag. Nat. Hist. viii. p. 513) one that he saw in Perthshire, November 8th, 1834, and Mr. Cornish is reported to have seen one in Devonshire, November 27th, 1835.

The Swift commonly chooses its nesting-place in holes under the eaves of houses, in church-towers and other buildings, as well as crevices in rocks, and will not disdain a cranny in the face of a chalk-pit. In countries not offering such accommodation it uses hollow trees, and it has been recorded as so doing in England, though perhaps on insufficient authority. It has been also said to remain for hours in its retreat on windy days, motionless and in the dark, but this assertion is certainly not generally, if ever, true; for when insects are to be had the bird is regardless of weather, and its occasional withdrawal from observation during storms can with reason be accounted for by the vast distances to which its speed of flight enables it to range without difficulty, in quest of prey that may be more abundant away from its home. Ordinarily it is seen darting rapidly or wheeling in circles while in pursuit of its insect-food; at one time sailing with ease and pleasure at an elevation where it is scarcely perceivable, and at another passing the spectator, in Gilbert White's words, "with the almost inconceivable swiftness of a meteor." Little, or perhaps nothing, is known of the means whereby birds in their rapid career are able to adjust their sight, so as to avoid obstacles and make their captures, but it is obvious from the most cursory observation, that few can more completely control their visual organs than Swifts, though Swallows must approach them very nearly in this respect.*

The nest is formed of bits of straw, dry grass and a few feathers, all collected on the wing, and glued firmly together by the mucous secretions of the bird† so as to become a hard crust. In this country, from the site generally chosen, the structure is deeply begrimed with dust or soot, so as to present, notwithstanding the neat arrangement of its materials, a most uninviting aspect. Occasionally other substances are added, such as shreds of cloth not unfrequently, and two nests taken by Weir to Macgillivray were thickly intermixed with bud-scales of the Scotch-fir, while Mr. Gould states that he has found fresh petals of the buttercup adhering to the inner walls. The eggs, from two to four in number, are of a dead white and measure from 1·08 to ·92 by from ·68 to ·62 in. The young are ordinarily hatched about the middle of June; but they do not take flight till the end of July or sometimes still later. Though zealously fed by their parents, while they stay in the nest, they are but little attended to afterwards, and usually the whole family leave their home so soon as the young are able to sustain themselves firmly on the wing. Unless some accident happens to the first eggs, the Swift produces only one set in the season, but should they meet with disaster, a second seems to be invariably laid, and Salmon found young in a nest so late as October 1st—nearly seven weeks after all the asso-

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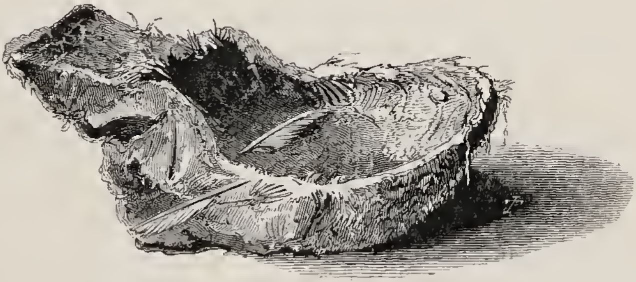
* Mr. O. Clapton says (Mag. Nat. Hist. v. p. 203) that at Hastings he saw a Swift dash itself against a wall, when it was picked up stunned, and almost immediately died in his hand. He could not perceive any defect in its eyes, but he mentions that it was infested with parasites, which may well have impaired its vision. Mr. Watters also mentions a Swift in his possession, obtained by striking against a man's hat in a Dublin street and falling senseless at his side.

† Macgillivray's figure (Br. B. pl. xxii. fig. 5) of the digestive organs of the Swift shews the enormous size of its salivary glands, situated between the rami of the lower jaw, whence these secretions arise, but it is doubtful whether they may not be supplemented by others proceeding from the proventriculus. Such at any rate, according to Home (Phil. Trans. 1817, p. 332, pl. xvi.), appears to be the case in birds of the allied genus *Collocalia*, which, though commonly

called "Swallows," belong to the *Cypselidæ* and form the edible nests so eagerly sought by Chinese epicures. These nests, one of which is here represented, are



when first constructed, wholly composed of mucus, which dries and looks something like isinglass. Their marketable value depends on their colour and purity, for they are often intermixed with feathers and other foreign substances. The *Collocaliæ*, of which the number of species seems to be uncertain, inhabit chiefly the islands of the Indian Ocean from Mauritius eastward, as well as most of the tropical islands of the Pacific as far as the Marquesas—one species occurring in the hill-country of India.

ciates of their parents had departed (Mag. Nat. Hist. ser. 2, i. p. 110).

Year by year the Swift revisits its old haunts, generally arriving in pairs, and, unless access to its accustomed lodgings has been made impossible, it will reoccupy them, as proved nearly a century since by Jenner (Phil. Trans. 1824, p. 16), who determined the identity of some of the birds so returning by marking them indelibly*. New buildings it seldom affects, partly no doubt because, owing to their condition, it cannot effect an entrance to them, and Gilbert White, in his unsurpassed monograph of the species, has noticed the fact of a particular locality being annually frequented by exactly the same number of pairs of birds throughout a long series of years. Almost every natural function of the Swift—sleep, oviposition and incubation excepted—seems to be performed in the air, and its evolutions on the wing have been admirably described by Macgillivray in terms which need not be repeated here. A most engaging sight it is to watch its movements aloft, but it is no less interesting to behold some half-dozen birds racing, as they often do, within a few feet of the ground through the narrow lanes or up and down the most confined courts of a small country town or village, uttering the while their singular squealing note, which writers have tried to syllable *swee-ree*. This cry has obtained for the bird in some parts of England the name of "Screech-Owl"†, and its emission has been thought by some observers to depend on the state of the weather, which is no more true than that is indicative, as Macgillivray held, of an abundance of prey. It seems to be of the nature of a song ‡, and is probably peculiar to the male, when impelled by the same feelings of love or jealousy as actuate other birds. It is seldom heard far from the breeding-place, though the Swift, as before stated, roams daily to great distances, and may be frequently seen pursuing its prey miles from its abode, as on open spaces like Salisbury Plain, or following the course of a river when, in its eagerness, it will sometimes seize the artificial fly of the angler, and pay for its impetuosity the penalty of its life. On the ground it has been often said to be almost helpless, and unable to take wing until, by creeping to the edge of an uneven surface, it can launch forth and avail itself of the limbs on which its living depends*; but this is denied by Mr. Hancock (B. Northumb. &c. p. 82), who has twice seen a captive Swift take flight from the level ground. Couch observes (Mag. Nat. Hist. v. p. 737) that it grasps by its claws in opposing pairs, not bending its toes, but straightening them and decurving its claws underneath them. Placed in a cage it can move in all directions, clinging to the wires, hanging back downwards to the top, aiding its progress with its chin, though not with its mandibles, and roosting upright against the side. During the breeding-season a rank odour pervades this bird.

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* One of the examples marked by him was recognized seven years afterwards. So little is known of the age to which birds attain, that this piece of incontrovertible evidence is worth preserving.

† Another common name is "Deviling."

‡ It must be remembered, however, that the Swift has no true song-muscles.

The Swift is pretty generally distributed over Great Britain, except in the Outer Hebrides, and occurs occasionally in Orkney and Shetland. It is common also in certain localities in Ireland, though never seen, says Thompson, in some extensive districts—especially of the west. It has been met with a few times in the Færoes, but is common throughout the greater part of continental Scandinavia, breeding as far north as Enara, and Herr Nordvi informs the Editor that two examples were obtained in the autumn of 1876 on the Varanger Fjord. Thence its summer-range extends to the government of Archangel and so to the Ural. Mr. Seebohm seems not to have found it in Siberia, but it is said to occur in Dauuria and Mongolia, and possibly thence to China. It appears to be common in Turkestan, Afghanistan and Cashmere, and is abundant in some of the valleys of the Western Himalayas, visiting the Punjab in the rainy season, but in India generally is replaced by the allied *Cypselus affinis*. It has been observed in Persia, and is common in Asia Minor and Palestine. It seems not to have been determined from Egypt until Mr. J. H. Gurney, jun. obtained a specimen there in 1875, and its asserted appearance in the rest of North-Eastern Africa is questionable, since *C. pallidus*, a form long confounded with it, has perhaps been mistaken for it, but otherwise it ranges, so far as may be inferred, over the whole of that continent, even to the Cape of Good Hope, where it is extremely abundant from towards the end of the year till May. It is not known to occur in the Atlantic islands, but in those of the Mediterranean, as well as throughout every country of Europe, it is a well-known summer-visitor.

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* Aldrovandus long ago remarked (lib. xvii.) "Apodes ut pennis prævalent, sic pedibus degenerant." The flexibility of the axillary joint in the Swift is very singular. Holding one by the body the wings droop as though broken.

The bill is black: irides dark brown: the whole plumage, except a small greyish-white patch under the chin, nearly uniform blackish-brown, glossy above: toes and claws black. There is no external difference between the sexes.

The whole length is nearly seven inches and a half. From the carpal joint to the tip of the wing, which reaches an inch and a quarter beyond that of the tail, six inches and five-eighths.

Young birds have the chin of a purer white, and most of the feathers on the upper surface tipped with buffy-white.

The middle figure of the vignette represents the sternal apparatus of the Swift, which will be seen at a glance to differ most essentially from that of any Passerine bird, in the form of the coracoids and furcula, and in the absence of the forked manubrium or anterior process of the keel, as well as in the absence of the posterior notches of the sternum. The peculiar structure of the foot is also exhibited by the two lateral figures, one shewing that limb with the four toes directed forwards in their ordinary position, and the other the several bones composing it divested of their integuments. It will be observed in this figure that the digital phalanges instead of following the usual arithmetical series among birds generally—2, 3, 4, 5, are 2, 3, 3, 3—one phalanx being absent in the third digit and two phalanges wanting in the fourth. This structure is found in the genus *Cypselus* and its ally *Panyptila* (an American form) but not, so far as is known, in other genera of *Cypselidæ*.*

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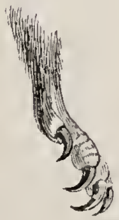
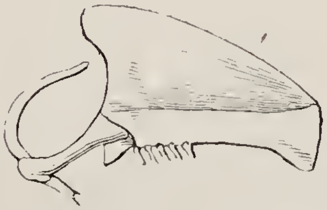
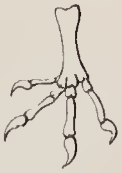
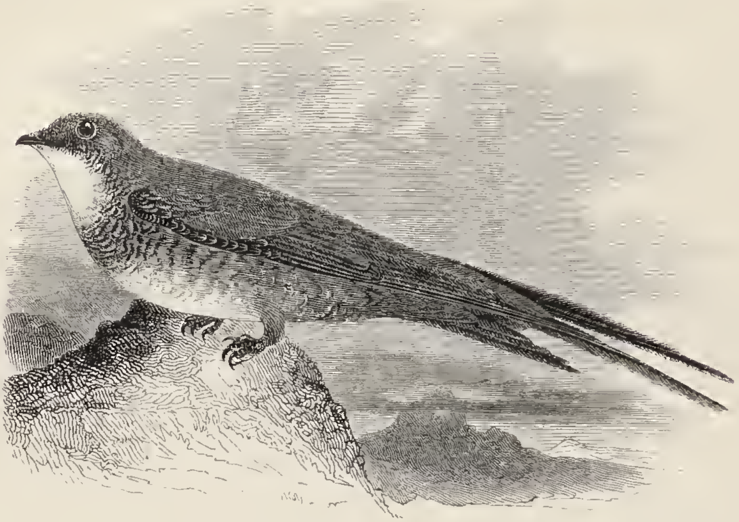
* An example of the "Needle-tailed Swallow" of Latham (Synops. Suppl. ii. p. 259), a species belonging to the genus *Acanthyllis* or *Chætura* of modern ornithologists and to the family *Cypselidæ*, was shot at Great Horkesley near Colchester, July 8th, 1846, having been seen there two days before; and, while yet fresh, was examined by Newman, Doubleday, Mr. Fisher and the Author of this work (Zool. p. 1492). Mr. Yarrell, however, did not think fit to mention it in his last edition, doubtless regarding it as a straggler from Australia. While the present sheet was under revision the occurrence of a second example in England became known to the Editor. This was killed July 26th or 27th, 1879, near Ringwood, having been a few days before seen flying with a companion over the river Avon by Mr. Corbin, who kindly allowed the specimen to be exhibited to the Zoological Society, January 6th, 1880. The species is not known to have been noticed in Western Asia or elsewhere in Europe; yet, when its wide range and great power of flight is considered, its appearance here need not excite surprise. Though first made known in 1802, from a specimen obtained in New South Wales) to which country and to Tasmania *Acanthyllis* or *Chætura caudacuta* annually migrates), it was procured by Steller many years before near Irkutsk, and was observed in Dauuria by Pallas, who, not recognizing its identity with Latham's species, redescribed it (Zoogr. R.-As. i. p. 541) under the name of *Hirundo ciris*. It has since been recorded from Amoorland and China, as well as Nepaul, Sikim and Bhotan, for it is identical with the *C. nudipes* of Mr. Hodgson; and it is said to breed in the Himalayas, as it doubtless does in Eastern Siberia. The genus can be easily distinguished by the structure of the tail, in which the shaft of each feather protrudes beyond the web as a sharp spine, and by the feet being formed on the ordinary model, and not as in *Cypselus*.









CYPSELUS MELBA (Linnæus*).

THE ALPINE SWIFT.

Cypselus alpinus†.

At least eighteen examples of this Swift are now recorded as having been taken within the limits of the British Islands; the first of which was shot at sea eight or ten miles from the south coast of Ireland about midsummer 1829, and was sent by Mr. Sinclaire to Selby, as mentioned by him in 1831 (Edinb. Journ. Nat. and Geogr. Sc. n.s. iii. p. 170; Trans. N. H. Soc. Northumb. i. p. 291). A second specimen, "since", according to Mr. Jenyns (Br. Vert. p. 160), killed at Kingsgate in the Isle of Thanet, was seen by Mr. Gould in 1832 (P. Z. S. 1832, p. 130), and, subsequently passing into the possession of Mr. R. B. Hale, was lent by him for the use of this work, the figure above inserted being drawn from it.‡ According to Mr. E. P. Thompson (Notebook

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[*] *Hirundo melba*, Linnæus, Syst. Nat. Ed. 12, i. p. 345 (1766).

[†] *Hirundo alpina*, Scopoli, Annus I. Historico-Naturalis, p. 166 (1769).

[‡] In former editions of this work the bird was said to have been "shot early

of a Naturalist, p. 226) an example flew into a room at Dover, August 20th, 1830, and was secured; but this statement was not published till 1845. The fourth bird was shot in the latter part of September, 1831, at Old Buckenham in Norfolk (Mag. N. H. vi. p. 286; Field-Nat. i. p. 172), and was afterwards presented by Mr. Fulcher, who obtained it, to the Museum at Norwich. A fifth, being the second Irish occurrence, is said by W. Thompson (P. Z. S. 1834, p. 29*) to have been killed at Rathfarnham, near Dublin, early in March 1833, and to be preserved in the collection of Mr. Warren, to whom it was sent while perfectly fresh. The sixth example was picked up dead at Hinxton near Saffron-Walden, in July 1838, as communicated to the Author by Mr. Joseph Clarke. On October 8th, 1841, an example, killed at Wokingham, was seen by the Author before it was skinned, Mr. Gould having brought it to London to preserve. It is now in Mr. Bond's collection. Couch (Corn. Fauna, iii. p. 147) states that in June 1842, one was taken on board a vessel about forty miles west of the Land's End. Thompson says that an example was shot at Doneraile in the county Cork in June 1844 or 1845. In October 1851, one was knocked down, while sitting on a rail, at St. Leonard's, and passed into the possession of Mr. Johnson of that place (Zool. p. 3300). In the same year an example was exhibited to the Somerset Archæological and Natural History Society (Nat. 1851, p. 234) as having been killed in that county—near Axbridge, as Mr. Cecil Smith, who has since seen it, believes. Mr. Rodd records (Zool. p. 6808 and s.s. p. 2240) one, now in his collection, shot at Mylor near Falmouth in the summer of 1859, and also another obtained some years before near the Lizard. In August 1860, a specimen, now the property of Mr. Whitaker, was shot at Finchley, as

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in June 1820." Mr. Jenyns's assertion above quoted indicates that herein was a mistake, and possibly 1830 was the year in which it occurred. Mr. Gould unfortunately did not give the date, and can now throw no light on the matter.

* The first record of this is in the 'Dublin Penny Journal' (i. p. 320) of March 30th, 1833, where it is said (incorrectly, according to Thompson) to have occurred in the preceding February. Its appearance in a northern latitude, so early as March, is of itself surprising enough.

stated by Mr. Sterland (Zool. 1879, p. 489). From October 16th to 18th, 1863, one was noticed in St. Mary's church at Hulme near Manchester, which, on the latter day, fell exhausted while service was being performed (Zool. p. 8955). On September 8th, 1870, one of two birds of this species, flying into a house at Aldeburgh, was killed and examined by Mr. Hele (Trans. Norf. and Norw. Nat. Soc. 1872–73, p. 117); and an immature example, now in Mr. Gurney's collection, was shot at Breydon in Norfolk, on September 9th, 1872 (Zool. s.s. pp. 3319, 5046). While, lastly, Mr. H. E. Rawson has recorded (Zool. 1880, p. 108) one shot, while flying with two more, near Ilfracombe, October 4th, 1876.*

This bird regularly visits Europe from Africa, in which quarter of the globe (though, during our winter, it is abundant so far as the Cape of Good Hope) it only seems to breed in Algeria. It is therefore as truly a native of Europe as the preceding species, but its breeding-range is entirely confined to the mountainous districts of the southern and central parts of the continent, within which limits it generally makes its nest in the church-towers and other lofty buildings rather than in rocky cliffs. All the examples that occur in Britain and the northern parts of Europe must be regarded as stragglers from their home. Several have been obtained in Heligoland, but one only, and that so long ago as 1804, in Denmark. Even in central, and still more in northern, Germany it is as irregular and uncommon as with us. It has once, according to M. de Selys-Longchamps, been observed in Belgium. In France it is seldom seen away from its mountain-haunts in the Pyrenees, the Alps and the Vosges*, and an example, killed at Etretat in Normandy, as recorded by M. Lemetteil (Cat. Ois. Seine-Infér. i. p. 218), seems to be the only one that has occurred in the north of that country.

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* This species is said to have been observed on several other occasions, though the specimens were not procured. Blyth says (Mag. N. H. vii. p. 346) that in May 1834 he saw some examples in company with the common species in Surrey, but so high as to be out of gunshot. Couch in 1838 (Corn. Fauna, i. p. 20) had been informed, on probable evidence, of two instances of its occurrence in Cornwall. According to Macgillivray, Mr. Harley of Leicester saw an individual Sept. 23d, 1839. One is said to have been observed at Kingsbury in August 1841, which may possibly have been the bird soon after killed at Wokingham. In May 1844, one is supposed (Zool. p. 1191) to have been twice seen near Cambridge. Mr. Blake-Knox records (Zool. s.s. pp. 456, 523) the observation of this species at Achill and Arran on the west coast of Ireland. According to Mr. Harting, an example is said to have been observed at Colchester June 8th, 1871, and in the same month it is believed to have been seen twice near Norwich by Mr. Stevenson (Trans. Norf. and Norw. Nat. Soc. *ut suprà*), and in Kent by Mr. Bartlett (Zool. s.s. p. 5046), as well as on the succeeding July 24th at Souter Point on the coast of Durham (*op. cit.* p. 2767).

Eastwards the extreme limit of its normal summer-range seems to be much the same as in Western Europe, and it may be traced, due regard being had to the nature of the district, from Transsylvania across the Ural to Turkestan, while there is a possibility of its reaching Mongolia. It is not uncommon in many parts of India, breeding in some of the higher elevations and wintering lower down, while it occurs also in Ceylon in the cold season, if it does not breed there, as Capt. Legge (B. Ceyl. p. 318) thinks is possible.

The White-bellied Swift, to use a name often applied to this species, seems to have been first made known in 1741, by Edwards, to whom it was sent by Catesby as having been obtained by his brother at Gibraltar, where it was afterwards observed by John White, as he wrote to Linnæus, to breed in thousands, but sparingly only in our own time by Col. Irby. It appears to reach Europe somewhat later than the common Swift, and to have the same general habits, though, from its proportionally larger wings, it flies more rapidly, and from its larger size and conspicuously white belly, is easily distinguished. Its nest, placed (as before said) in holes of rocks or buildings, is described as being small for the size of the bird, semicircular when placed against a vertical surface, and formed of straws, grasses and leaves, with moss or almost any other material it can collect on the wing, the whole being glued together with its saliva. The eggs are said to be from two to five in number. They are of a dead white, and measure from 1·26 to 1·17 by from ·8 to ·72 inch.

The bill is black: the irides dark brown: the lores brownish-black, bounded above by a dull white line; the head, sides of the neck, and the whole upper surface of a nearly uniform hair-brown, glossed with green, the flight-feathers rather darker, and mostly edged with pale brown, the shafts of the primaries greyish-brown; middle of the chin, throat, lower part of the breast, and the belly, white; across the upper part of the breast a broad hair-brown band; legs, feet and lower tail- as well as wing-coverts hair-brown, the last with light tips: toes orange-brown; claws dark brown.

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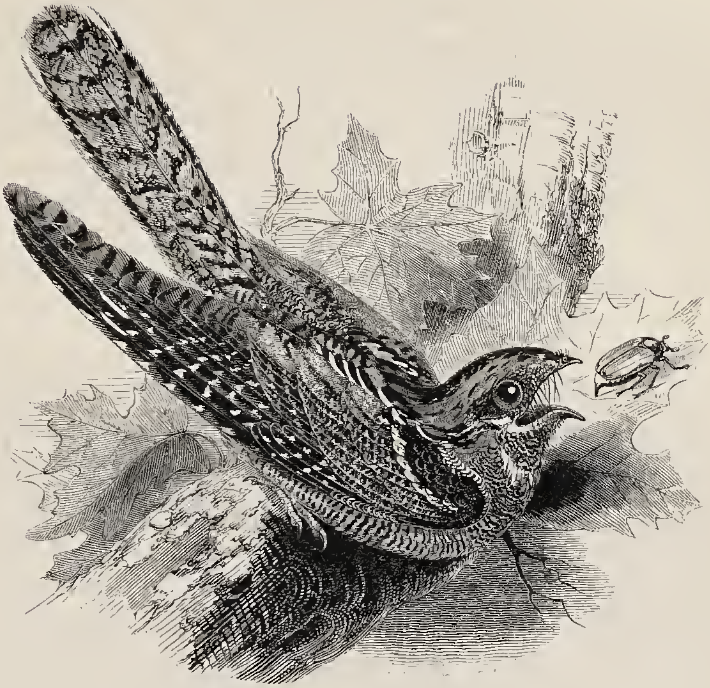
* Dr. Marchant however says (Cat. Ois. Côte-d'or, p. 59) it breeds near Nolay.

The whole length is about eight inches and three-eighths; from the carpal joint to the tips of the wings, which, when closed, reach more than two inches beyond the tail, about eight inches and five-eighths.

There is no appreciable difference in the outward appearance of the two sexes. The young have nearly all their feathers tipped with dull white.



Caprimulgus europæus, Linnæus*.

THE NIGHTJAR.

Caprimulgus Europeus.

Caprimulgus, *Linnæus*†.—Bill very short, flexible, broad at the base, much compressed at the point; gape very wide, extending behind the large eyes; upper mandible decurved at the tip, and beset on each side with a row of moveable bristles, directed forwards; lower mandible upturned at the tip, so as to meet the upper at the point, leaving an open space further back. Nostrils basal, with a prominent membranaceous rim, clothed with very small feathers. Wings long; with ten primaries, the first shorter than the second, which is the longest. Tail, of ten feathers, pretty long and slightly rounded. Legs weak; tarsi short, feathered in front for two-thirds of their length; feet with three toes before, one behind, the anterior united as far as the first joint, the posterior turned inwards at right angles, inner and outer toes equal, the latter with but four phalanges; claws short, except that of the middle toe, which is long and serrated on the inner edge.

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[*] Syst. Nat. Ed. 12, i. p. 346 (1766).

[†] *Loc. cit.*

The Nightjar or Goatsucker* is the only representative among our native birds of a very interesting and well-characterized Family, which inhabits almost all parts of the world, and has some alliance with that last treated, though the difference between the *Cypselidæ* and the *Caprimulgidæ* is so marked, that no doubt has ever been entertained as to their separation being warranted. The habit of taking their insect-food on the wing is indeed possessed by both groups in common with the Swallows and some other birds; but with nearly all the Nightjars this habit is nocturnal or crepuscular, and, being correlated with many peculiarities of external structure and form, is sufficient to render their determination easy, apart from the presence of many internal characters.

The Nightjar is a summer-visitant to Britain, and, like most of the species included in that category, it comes to us from Africa. It is ordinarily one of the latest to arrive, and seldom reaches this country before the middle of May, commonly departing about the middle of September. Capt. Hadfield, however, records (Zool. p. 6977) his having seen one in the Isle of Wight February 19th, 1860, and Mr. Gatcombe informed Mr. Harting (Summer Migrants, p. 204) of its appearance near Plymouth April 10th, 1872, while Montagu mentions having shot one in Devonshire, November 8th, 1805, and Couch says one was killed in Cornwall, November 27th, 1821.†

The Nightjar commonly frequents moors and heaths, especially such as are diversified by patches of fern, as well as woods and plantations, most usually resting on the ground. If disturbed it will often fly to a high tree, should one be near, and then, on being cautiously approached, it may be found crouching on a branch, not sitting athwart, as most birds do, but lengthways*, the head being kept lower than the body—a position which it commonly if not invariably assumes whenever it perches; and in such an attitude requiring a quick eye to detect it. On the ground also it squats close; and, owing to the colour of its plumage closely resembling that of the surrounding surface, is seldom seen until it is almost trodden upon, when it suddenly opens its wings and starts up silently as if from under the intruder's feet. It generally affects dry, sandy or stony places, where they exist in the neighbourhood of its haunts, and is said to be partial to those in which it can bask in the sun; but it is certainly often found under the deep shade of trees where the soil is comparatively free from vegetation. One habit, well known to all who are acquainted with the bird, but of which Mr. Dillwyn first sent word to the Author, is that of stationing itself in the middle of a dusty road or pathway in the summer-twilight, with the apparent object of enjoying a sand-bath, and of flying on, when approached, some twenty or thirty yards to a similar dusty spot—a proceeding it will repeat time after time, in advance of the wayfarer, until it has traversed a distance perhaps of half a mile, when it will wheel round and resume its station behind him.

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* The absurdity of this common name, which has its equivalent in most European tongues—both ancient and modern, nowadays needs no shewing, but the absurdity was not so great as that of the notion entertained by some writers that the bird directed its course by looking through the roof of its mouth, which, to that end, was so thin as to be transparent!

† The Editor, when a boy, was told by a woodman at Elveden of his having, many years before, flushed a Nightjar from her eggs on the 2d November, of which date the finder felt sure by its being his birthday.

Like some other crepuscular animals, the Nightjar seems often to have a regular range of flight which it follows many times in succession; but continued observation will shew that this apparent regularity really depends on the quarter whence the wind, if any, be blowing, and the consequent course of the heavy-bodied insects on which the bird chiefly feeds. Let the weather change and its beat is at once adapted to the new conditions. So, too, at one time some particular tree happens to be especially infested with cockchafers, rendering it a favourite resort of the Nightjar, which may then be seen, for several consecutive evenings, wheeling round the leafy mass in active pursuit of prey. During the period when, in our latitudes, there is no real night, this bird seems to be engaged in seeking its food from sunset till dawn, but no one can say for how long it hunts when the days become shorter, and information is wholly wanting as to its behaviour in its tropical winter-quarters where twilight lasts only a few minutes, as well as in the extreme limits of its northern range where in summer the night is as light as the day. It is, however, certain that the Nightjar, much as may be its custom, when with us, to pass in slumber the whole time that the sun is above the horizon, is far from being incapacitated by the broad glare of noon, and, among other witnesses to the fact, Sheppard and Whitear state (Trans. Linn. Soc. xv. p. 33) that they had twice seen it hawking about in search of food at midday, upon one of which occasions the sun was shining very brightly.*

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* Hence, says Vieillot, comes one of its vulgar names—"*Cochebranche.*"

The presence of the Nightjar is made known to us almost immediately on its return hither by its conspicuous habit of chasing its prey in the twilight as already mentioned. As the season advances the song, for so it must be called, of the cock attracts attention from its peculiarity. This song seems to be always uttered when the bird is at rest, though the contrary has been asserted, and is the continuous repetition of a single jarring note which has been likened to the noise made by many kinds of machinery in motion, a spinning-wheel† among others. The sound can be easily imitated by vibrating the tongue against the roof of the mouth; but the imitation, excellent as it may be close to the performer, is greatly inferior in power, being almost inaudible to any one twenty yards off, while the original can be heard in calm weather for half a mile or more. It is uttered at intervals, chiefly in the evening, and seldom lasts above five minutes at a time, its duration being commonly only from a minute and a half to two minutes. In hot weather it may be heard by day even at noontide, but it is then delivered drowsily, as it were, and without the vigour that characterizes its crepuscular or nocturnal performance. On the wing while toying with his mate, or executing his rapid evolutions round the trees where both find their food, the cock occasionally produces another and equally extraordinary sound, which by some excellent observers has been called a squeak, but to the writer is exactly like that which can be made by swinging a whip-thong in the air. How the bird produces this sound is unknown, but it often accompanies a sudden change in the direction of flight, and especially a sudden shooting aloft which ends in a downward glide. When disturbed from rest, something of the same kind may also be often heard, but then it would seem to be the result of smiting the wings together, though at other times the flight is noiseless. Among the many agreeable occupations which so frequently gratify the lover of Nature, not the least is that of watching the behaviour of Nightjars on a summer's evening, especially if they be engaged in seeking their food near the ground, as they not unfrequently do.* Their command of wing is very great, and the rapid twists they make in quest of active prey, rendering them alternately invisible in the gathering shades and then conspicuous against the fading light adds a mysterious charm to their silent flittings, for the spectator never knows in what quarter to expect one of them to appear, and indeed is apt to exaggerate the number of birds around him. The common opinion that the Nightjar always flies open-mouthed is not confirmed by such observations as circumstances permit, and, as Macgillivray has well remarked, would seem to be unreasonable. The wide gape can doubtless be instantaneously opened and shut, and the captured insect immediately finds itself overwhelmed with the viscid saliva secreted by the faucial glands.

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* The elder Lambert noticed the fact (*op. cit.* iii. p. 13) of the bird taking moths, to the annoyance of a practical entomologist, so late as ten o'clock at night, but he omitted to mention the precise season of the year, or whether the moon was shining. Its availing itself of the pursuits of entomologists has also been elsewhere remarked (Zool. s.s. p. 2660).

† Hence come many of the local names of the species:—"Spinner," "Wheel-bird," "Nightchurr" and perhaps "Churn-Owl"—though this last may possibly be a corruption of "Fern-Owl," suggested by its nocturnal habits and its haunting places where brakes grow.

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* Some dogs delight to hunt field-mice in the meadows at nightfall. When so employed their movements disturb a considerable number of moths, and the Nightjar, thereby attracted, will keep hovering over the dog's head, and eagerly seize every moth that takes wing. Mr. R. Gray says that he has seen this bird "in grass fields cleverly picking ghost moths (*Hepialus humuli*) off the stems, from the points of which these sluggish insects were temptingly hanging." The Editor, however, has never observed the Nightjar take any prey that was not flying, though it has been said to eat caterpillars, slugs and other small mollusks, as well as young frogs and their spawn (Bailly, Orn. Savoie, i. pp. 220, 221) !

That the bristles along each side of the upper mandible assist this bird while feeding on the wing, by increasing the means of capture by the mouth, there can be little doubt—though it is to be remarked that one section of the Family, containing among others the American Night-Hawks (*Chordediles*), is not so provided; but the use of the serrated claw on each middle toe is not so obvious; and zoologists have delighted in exercising their ingenuity to explain the function of this organ, which, equally with the maxillary bristles, is not possessed by all the *Caprimulgidæ*, while it is found also in several other groups of birds by no means related to them. Gilbert White thought he had distinctly seen the Goatsucker "put out its short leg whilst on the wing, and, by a bend of the head, deliver somewhat into its mouth." Hence he not unnaturally inferred that the use of the serrated claw was to aid in the capture of prey. Atkinson also quotes (Comp. Orn. p. 108) the opinion of a correspondent to the same effect, but the very weak grasping-power of the bird's foot forbids our accepting this explanation. Other uses have been assigned to this organ, namely to comb out the rictal bristles—which seems inadmissible, since many genera of the Family want them though possessing the serrated claw—or to clear the mouth from the sharp hooks on the legs of insects—as suggested by Mr. Hayward (Mag. N. H. iii. p. 449) and others, while some have supposed it is supplied as a means of getting rid of parasites—a process which Wilson says he actually saw in the case of a captured bird of an allied American species, *Caprimulgus carolinensis**. Mr. Sterland believes (B. Sherw. p. 174) that this feature is correlated with the bird's practice of sitting, as before stated, lengthways on a branch—the serrated edge of the claws being "placed in exactly the best position for preventing the foot from slipping sideways"—an inconvenience which is further guarded against by the lateral position of the hind-toes—and remarks in corroboration of this theory that some exotic Nightjars, of the genera *Podargus* and *Ægotheles* especially, which have the middle claw smooth and the hind-toe directed backwards, perch across the branch on which they sit. Amid all these suppositions it seems best to confess that the true function of the organ has yet to be determined, the last being perhaps the most plausible, though not applying to all birds similarly furnished.

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* The observation is doubtless true so far as it goes, but too much importance must not be attached thereto. Birds generally use their claws for this purpose, and birds in captivity especially do so if denied the means of dusting themselves.

The Nightjar makes no nest whatever, but lays its two* eggs on the ground, sometimes choosing the bare soil, but nearly as often placing them on lichen or moss of short growth. After incubation has made some progress, a slight hollow, caused no doubt by the weight of the sitting bird (light though it be) is perceptible; but there is no sign of any depression being formed intentionally, nor is any shelter sought. Yet markless as the spot may be, it is often used year after year by the mother, the eggs being laid within a few inches of where their predecessors of the summer before had been deposited. So far as is actually known, only one brood, accidents excepted, is produced in the season, but since eggs may be found from the end of May to the end of July—or even in August (Journ. f. Orn. 1860, p. 472)—a second seems to be occasionally possible. They are generally laid about the beginning of June, and are of elongated form, having both ends nearly equal, white, sometimes tinged with cream-colour, blotched, mottled, clouded or veined, in wonderful variety, with brownish-black, lighter brown or lilac-grey of different shades,† and measure from 1·34 to 1·08 by from ·89 to ·78 in. The young when hatched are covered with down, and, though remaining for some days in their birth-place, can, it would seem, at an early age display on occasion a considerable amount of activity.* When about half-grown the feathers begin to shew. The fledglings are not very hard to rear, and may be kept through the winter, as recorded by Salmon (Mag. N. H. ix. p. 528) and others (Journ. f. Orn. 1869, p. 220; 1870, p. 69), but it seems that in captivity they never attempt to feed themselves.

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* Mr. P. Bartlett records (Zool. p. 445) the finding of two young birds and one egg in a "nest"; but there is nothing to shew that all were the offspring of one mother.

† No reasonable person can doubt the protective nature of the colouring of these eggs, exposed as they are to innumerable dangers. Some species of Nightjars are said to remove their eggs in their mouth if they have been found and handled. The Editor cannot find proof that our own bird takes this precaution,

The Nightjar is common in nearly every county of Great Britain, though perhaps more plentiful in some of the southern counties of England.† In Ireland, says Thompson, it is a regular summer-visitant to certain localities in all parts of the country, but of rare appearance elsewhere. Its occurrence in the Outer Hebrides is only known from one obtained in North Uist in 1870, as Sir John Orde informs the Editor, and it is but an accidental straggler to Orkney and Shetland, though it has been many times observed in the latter. It is also an occasional visitor to the Færoes. In Scandinavia it seems to be pretty abundant as far as lat. 63°, and in Russia it reaches Archangel. Its range further eastward is very imperfectly defined. Pallas, indeed, gives it as being found throughout the whole of temperate Siberia, but it probably does not extend beyond Irkutsk. It would seem to inhabit Turkestan and Persia, some of the specimens obtained in both countries varying by having a lighter plumage. It is a summer-visitant to Palestine and is found in Arabia. In Egypt and Nubia it appears to have been only observed on passage, but how much further it goes to take up its winter-quarters is unknown, for the South-African Nightjar, recognized by Andrew Smith as identical with our own, has been since described as specifically distinct. Drake says it breeds in Morocco, and it is said to occur in Algeria even in winter. It is also recorded from Madeira. Throughout Europe, short of the limits already assigned, it is very generally distributed.

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* Mr. H. M. Wallis writes to the Editor that he once put a Nightjar off her two down-clad young, which he picked up and set side by side on his hand. One remained quiet, but, to his surprise, "the other jumped off, and ran like a chicken to the roots of a bush near by," where it squatted.

† In some places it suffers much persecution from the perversity of gamekeepers who stupidly consider that a bird which looks so much like a Hawk on the wing as to be mistaken for one by little birds, when it comes abroad, must have Hawk-like habits. As it is, we have not a more harmless species than the Nightjar and not many more beneficial, for it feeds almost entirely on cockchafers and moths—the latter being chiefly those whose larvæ are as destructive to the roots of grass as are the grubs of the former.

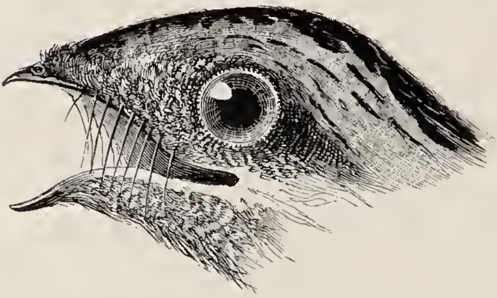
The upper mandible is black, the lower also black near the tip, but pale brown at the base: the irides dusky-black: the upper plumage generally is greyish-brown, produced by minute specks of blackish-brown on a yellowish-white ground, with blackish-brown stripes on the head, the scapulars, and middle of the back, varied also in places, especially behind the nape and on the margin of the scapulars, with buff patches; the fore part of the wing is dark brown, the feathers mostly tipped with deep buff; the wing-quills are brown, irregularly barred with deep buff, and near the tip marbled with dark grey, the first three primaries on each side, in the male, with a large well-defined white spot on the inner web; the middle tail-feathers greyish-brown, freckled and irregularly barred with brownish-black; on the lateral quills this dark barring increases in width, occupying the greater extent of the webs, and the lighter spaces are tinged with buff; the two outermost quills on each side, in the male, are broad, tipped with white; the sides of the head and ear-coverts are buff, closely barred with dark brown; the chin is the same, but bounded beneath the gape by an indefinite streak of buffy-white; the throat generally presents a white patch tinged with buff, varying much in extent; the breast greyish-brown closely barred and freckled with dark brown, but on the lower parts the ground-colour becomes buff and the bars and freckling are less numerous, until, on the belly, flanks and tarsi, the latter wholly disappears and on the lower tail-coverts the former are far apart: the legs, toes and claws, orange-brown.

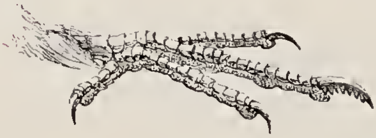
The whole length is ten inches and a half: from the carpus to the tip of the wing, seven inches and three-eighths.

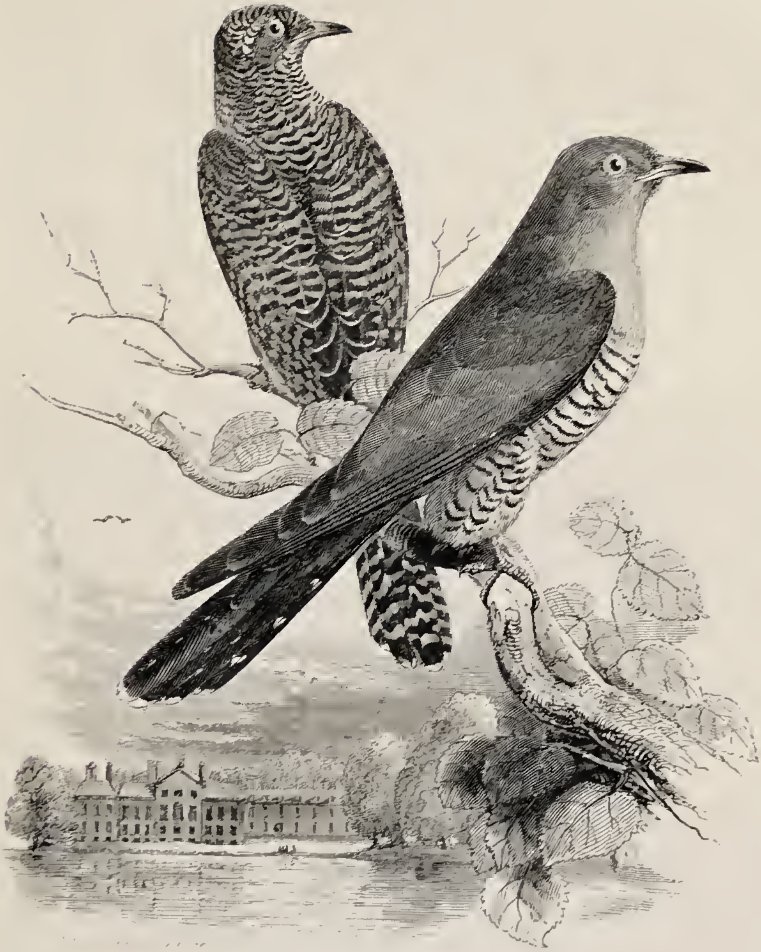
The female is darker and less ferruginous than the male, and wants the white spots on the quills of the wings and tail.

The young, when first hatched, are clothed in down, greyish-buff at the base and dark brown at the top, forming a mottled surface above, and beneath uniform pale brown. The feet are early well-developed, being, when the feathers begin to grow, nearly as long as those of the adult. At this age the claw of the middle toes is not serrated. The first plumage much resembles that of the parents; but the males have the spots on the wings and tail buff, more or less mottled with brown, instead of pure white.[*]

[*] Mr. Hancock recorded (Ibis, 1862, p. 39) the occurrence, October 5th, 1856, at Killingworth in Northumberland, of a Red-necked Nightjar, *Caprimulgus ruficollis*,—a South-European species, much resembling our own, but distinguishable by its larger size, its lighter grey head and rufous collar. Other examples may possibly have visited this country, and been mistaken for those of the common species, but *C. ruficollis* has a range so far to the southward that its only known appearance in England, especially when the season of the occurrence is considered, seems at present not to justify its being regarded as a "British Bird". It has not been recognized in any part of Germany, or even in central France.







Cuculus canorus, Linnæus*.

THE CUCKOW.

Cuculus canorus.

Cuculus, *Linnæus* †.—Bill short and subcylindrical, culmen somewhat decurved, upper mandible slightly notched near the tip; lower mandible nearly straight beneath; gape wide. Nostrils basal, circular, with a prominent membranaceous rim. Wings with ten primaries, the first short, the third longest, the innermost three shorter than the first. Tail of ten feathers, the outer three pairs graduated, the middle two nearly equal. Tarsi short, feathered for nearly half their length; toes two before, two behind.

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* Syst. Nat. i. p. 168 (1766). † *Loc. cit.*

The history of the Cuckow has always been a subject of interest not only to ornithologists but to all lovers of Nature, and perhaps no bird has attracted so much attention, while of none have more idle tales been told.* Some of its habits are now well ascertained, but in regard to many of its presumed peculiarities there is still much to be learnt, before our knowledge of them can be deemed satisfactory, while the conflicting testimony offered even by trained and credible observers makes the task of the Cuckow's historian one of the hardest that Ornithology imposes on her followers. Its strange and, according to the experience of most people, its singular custom of depositing its eggs in the nests of other birds, thus freeing itself from the duty of further providing for its offspring, and leaving their education to foster-parents, is enough to account for much of the curiosity that has been felt; but this custom is shared by many of its Old-World relatives, and in America by birds not at all related to it. As to the way in which this parasitism can have originated, nothing save conjecture is to be offered, and that may be so far from the truth as to be hardly worth consideration.†

Anatomists and physiologists have over and over again taxed their powers to discover the reason of this extraordinary custom, but hitherto the various explanations, which have from time to time been offered, can hardly be deemed adequate, and the matter must still be left to the ingenuity of speculative minds. In this work it is desirable to avoid speculation as far as possible, yet it must be owned that some hypothesis is needed to render the Cuckow's history at all intelligible, partly to supply information that we lack, and partly to connect such results of observation as may be deemed facts. Even with this limitation the biography of the bird, to be written fully, would require a volume.

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* A mere list of the different contributions to the history of this species would probably extend over as many pages as can here be allotted to its consideration. Much of the Cuckow-literature is certainly of little value, and by no means repays the student, but all of it has to be mastered by any one wishing to do justice to the subject.

† On this subject reference may be made to some remarks in the 'Encyclopædia Britannica' (Ed. 9, iii. p. 772), too long to be here quoted, but it is to be observed that, granting the probability of the ancestors of our parasitic Cuckows, having at some early period habitually built their own nests, there is of course no evidence of the progenitors of the many species which are now their dupes having ever been their invaders.

The Cuckow generally appears in this country about the middle of April,* the cock-birds arriving first, and their well-known notes are heard with pleasure as evidence that spring has returned. In a few days the hens follow, and soon after amorous contests between keen and loud-voiced suitors may be noticed—contests that are continued for some weeks, until the respective pretensions of the rivals are decided. But while the females rove about almost at random, the males seem not to wander far from the station they assume so soon as they have settled themselves. There is a general and apparently well-founded belief that the latter are more numerous than the former, and it is also pretty evident that, unlike most other birds, Cuckows do not pair. Hence, according to the opinion of the best observers,† Cuckows are not polygamous in the ordinary sense of the word, but the hens consort with one cock after another in succession. Thus though a hen may often be seen followed by more than one cock, she is not followed very far or very long by any one bird in particular, her suitors returning one after another each to his own haunt, whence they continue to proclaim themselves almost incessantly. Even by night they are not silent, but as the season advances, their song is less frequently heard; and the Cuckow seems rather to avoid observation as much as possible, the more so since whenever it shews itself it is a signal for all the small birds of the neighbourhood to be up in its pursuit, just as though it were a Hawk, to which, indeed, its mode of flight and general appearance give it an undoubted resemblance.* Towards the middle or end of June its cry is no longer the "plain song" that was heard on its arrival; it becomes rather hoarser in tone, and its first syllable or note is doubled. Soon after it is no longer heard at all, and by the middle of July an old Cuckow is seldom to be found in these islands, though a stray example, or even, but very rarely, two or three birds in company, may occasionally be seen for a month later.

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* Its arrival has frequently been reported in March or earlier still, but such records must be treated with suspicion if not incredulity. Mr. Harper says (Zool. p. 3115) that a Cuckow's egg was taken in Norfolk, April 5th, 1851, and (p. 3145) that on the 14th of the same month he saw two, one of which he shot. Mr. Borrer informs the Editor that, in a series of observations made in Sussex for more than twenty years, April 6th, 1844, was the earliest day on which he noticed the Cuckow's occurrence.

† *Cf.* Van Mons, Bull. Acad. Bruxelles, i. p. 115.

So far about as much of the story of the Cuckow's life as falls within the experience of most people in this country has been told, but it relates mainly to the birds of one sex only. The females have been living for most of this time in a way even still more secluded. They are less numerous, as has been already said, than the males to begin with. They have no loud and musical note to attract attention †—one that they utter has been compared to the cry of the Dabchick, another (or perhaps the same) sounds to the writer not unlike the call-note of the Whimbrel. The roaming habit and flight in the open, which soon after their arrival rendered them conspicuous, has almost entirely ceased, and when seen, which is comparatively seldom, they are ordinarily lurking under some kind of shelter. Their chief business may be safely presumed to be the hunting for birds' nests into which they may introduce their own eggs. From what has gone before it may be gathered that, in connection with this subject, a good deal remains to be determined, most of which, however probable, is still to be proved. There is abundant evidence that the nest chosen by the Cuckow is often so situated, or so built, that it would be an absolute impossibility for a bird of her size to lay her egg therein by sitting upon or in the fabric, as birds commonly do,* yet so much caution is used by the Cuckow in her selection that the act of inserting the egg has been but seldom witnessed. It is not allowable to assume that the practice is always followed, but there have been a few fortunate observers that have actually seen the laying of her egg on the ground by the hen Cuckow, who then taking it into her bill has introduced it into the nest—though whether she had previously found and surveyed the nest, or not, is another point on which no opinion has been reached. Among such observers of one part of the operation, so far as our own country is concerned, the earliest seem to have been two sons of Mr. Tripeny, of Coxmuir, who informed Weir, as recorded by Macgillivray (Br. B. iii. p. 130), that as they were tending cattle on June 24th, 1838, they saw a Cuckow alight on a hillock near them. "It picked up an egg with its bill, and after having looked round about as if to ascertain whether there was any one in sight, it hopped down with it amongst the heath. The lads immediately ran to the place into which they had observed it descend, and when at the distance of about six feet, they saw it rise from the side of a titlark's nest into which it had introduced its head. In the nest, which was arched over with strong heath, and had a narrow entrance from the side, there was a newly dropped Cuckoo's egg along with one of the titlark's own." But perhaps the most satisfactory evidence on the point is that of Herr Adolf Müller, a forester at Gladenbach in Darmstadt, who says (Zool. Garten, 1866, p. 374) that through a telescope he watched a Cuckow as she laid her egg on a bank and then saw her slope her head to the ground, take the egg in her widely-opened bill and carry it to a Wagtail's nest close at hand, in which he immediately afterwards found it.

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* Dr. A. E. Brehm (Ornith. Centralblatt, 1877, p. 132) denies, however, that they take it for a Hawk, asserting that their behaviour towards a Cuckow is very different. The old fable of the Cuckow turning into a Hawk in winter-time would seem to have had its origin rather in the appearance of the one coinciding with the disappearance of the other, than in their outward likeness, though this indeed leads many people in these days, who ought to know better, into considering the Cuckow a "Bird-of-prey."

† Some observers have expressed their belief that the female sings, and the evidence of Blyth (Mag. N. H. viii. p. 329) has been quoted as affording an "unquestionable instance" of the fact. Reference to the statement will shew that it does not rest on his own observation, and he with others may be safely deemed to have been misled in this matter.

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* Young Cuckows too have more than once been found in a nest whence it was not easy to see how they could escape.

Cuckows indeed have been not unfrequently shot as they were carrying a Cuckow's egg, presumably their own, in their bill*—a fact which has probably given rise to the belief that they suck the eggs of other birds. The testimony in favour of this belief proves on examination to be very weak,† but it has doubtless been fostered by imperfect observation of circumstances the true explanation of which seems to have been first supplied by the late Mr. Rowley. This gentleman, who for a while made the Cuckow his particular study and had much experience of its habits, declared (Ibis, 1865, p. 186) as one of the results of his investigations that the hen Cuckow seldom succeeds in introducing her egg into another bird's nest without the act being resented, and consequently without using more or less violence and engaging in a scuffle, of which traces often remain. It would therefore appear that we may justifiably suppose that the Cuckow ordinarily, when inserting her egg, excites the fury (already stimulated by her Hawk-like aspect) of the owners of the nest by breaking, turning out of it, or even carrying off from it one or some of the eggs that may have been already laid therein, and this induces the dupe to brood all the more eagerly what is left to her. As to the assertion that the Cuckow herself takes any further interest in the fate of the egg she has foisted upon her dupe, or in the future welfare of its product, there is really no evidence worth attention, though some men of high scientific rank have asserted that such is the case. It is enough to remark that none of them have been sufficiently accustomed to out-door observation to inspire confidence in their own experience, or to be competent judges of that of others. Most of them relied on statements, made no doubt in good faith, but made without the accurate practice so necessary for a field-naturalist.* An old Cuckow may very likely in the pursuit of her business be now and then seen near a nest containing a young Cuckow; but that the latter was her own offspring, or that she was intentionally visiting it, are assumptions which cannot be allowed without stronger evidence than has been in most cases adduced.

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* The earliest instance of this in Britain seems to be that observed by Kinahan and Prof. Haughton as reported by Thompson (B. Irel. iii. p. 442). Another was soon after recorded by Mr. Harper (Zool. p. 3145) who saw a Cuckow flying with something between its mandibles. He followed and reached within twenty yards of it as it crawled like a Parrot by the side of a drain in a meadow. Then it stopped and he shot it, when he found the substance he had noticed in its bill to be its egg. Le Vaillant, however, seems to have been the first to discover this interesting fact, not indeed in our own species, but in the South-African "Coucou Didric"—the *Lamprococcyx cupreus* or *Chalcites aureus* of authors—a bird of like parasitic habits, two females of which he says (Ois. d'Afrique, v. pp. 47, 48) were shot by himself and his Hottentot Klaas, as they were carrying one of their eggs in their bill.

† Hoy, it is true, says (Mag. N. H. v. p. 278) that he detected a Cuckow flying away from a Wagtail's nest with one of that bird's eggs in its bill, after having left an egg of its own in exchange for the one taken. Other ornithologists have given similar evidence, but there is nothing to prove that the Cuckow meant to swallow its spoil.

The egg of the Cuckow—of which more must be said presently—having been successfully placed in the nest of her dupe,† it will be convenient to describe the subsequent events. There is abundant proof that the time of its insertion is very variable. It may be deposited before the owner of the nest has laid any egg of her own, or after she has completed her clutch. Several authorities have declared that the Cuckow's egg needs not so long a period of incubation as the eggs of most of the birds upon which its care is imposed; but this is a matter that must at present be deemed undecided.* In due time it is hatched, and then takes place one of the most wonderful things in the whole history of this wonderful bird; for the discovery of which we are indebted to the accurate observations of the celebrated Edward Jenner, as related by him in a letter to John Hunter, by whom they were communicated to the Royal Society (Phil. Trans. 1788, pp. 219–237). So strange a chapter of Natural History had never before been published, and it is by no means surprising that some of the contemporaries of those great men hesitated to credit what they therein read. Jenner's account of what he saw has, however, been fully confirmed by later experience, and exception can only be taken to some minor details of which it was impossible for him to assure himself.† It had of course been commonly known for centuries that very soon after the Cuckow was

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* Stories of this kind seem to have been first put forth in England in 1772 by Barrington (Phil. Trans. lxii. p. 299, note) whose example was unfortunately followed by Erasmus Darwin (Zoonomia, ed. 1794, i. pp. 172, 173, and ed. 1796, i. pp. 175–177) and Fleming (Brit. Anim. pp. 90, 91). In 1823, and again about five years later, Mr. Blackwall (Mem. Lit. Philos. Soc. Manchester, ser. 2, iv. pp. 464, 465, and Zool. Journ. iv. pp. 297–300), reversing the experience of White (in his seventh letter to Barrington), gave what is no doubt the correct explanation of the more prominent cases reported by those authors, namely that the birds seen were Nightjars. But notwithstanding this, John Edward Gray subsequently revived the belief by relating, it is said (Proc. Zool. Soc. 1836, p. 104), "a series of facts," to the effect that the hen Cuckow sometimes takes care of her young, feeds it after leaving the nest in which it was hatched, and teaches it to fly. The details of this naturalist's observations, which were "made by himself," as stated by Mr. Gould, in 1836 or 1837, (B. Eur. pt. xix.), seem never to have been published, and the only other information about them is that given by Blyth who said (Analyst, ix. pp. 67, 68) that Gray "affirms that he has himself seen a Cuckoo, day after day, visit the spot where one of its offspring was being reared, and which it finally enticed away from its foster-parents." There is therefore no means of accounting for the mistake, but that a mistake was made scarcely any one can doubt. In 1859 even, a celebrated ornithologist tried to persuade the Editor and some of his friends that the naked breast and belly of a Cuckow was full proof of the bird having been brooding. The nudity of these parts, figured by Prof. Schlegel, in 1831, in illustration of his often-quoted and little-read prize-essay (Natuurk. Verhandel. Haarlem, xix. pp. 237-268, fig. 1), is characteristic of both sexes of the Cuckow, and the example in question proved on dissection to be a male!

† Of the birds included in this work the egg of the Cuckow is recorded as

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having been found in the nests of the following species though not necessarily in the British Islands:—all the Shrikes; the Spotted Flycatcher; the Golden Oriole; the Song-Thrush, Mistletoe-Thrush (Zool. Garten, 1878, p. 177), Blackbird, Ring-Ouzel and Rock-Thrush; the *Sylviidæ* except the Rufous, Savi's and the Yellow-browed Warbler; the Wren; the Treecreeper; the Great Titmouse; all the Wagtails and Pipits; the Larks except the Shore- and the White-winged Lark; the Reed-, Great, Yellow and Cirl-Bunting and the Ortolan; the Chaffinch and Brambling, the Tree- and House-Sparrow, the Hawfinch and Greenfinch, the Serin, the Linnet and Mealy Redpoll and the Bullfinch; the Swallow; the Daw, Pie and Jay; the Ring-, Stock- and Turtle-Dove; and, most strange of all, the Little Grebe (Journ. für Ornith. 1876, p. 391)! But of these birds, seventy-eight in number, four—the Hedge-Sparrow, Reed-Warbler, Pied Wagtail and Meadow-Pipit, deserve particular notice as being those most commonly chosen as foster-parents.

* Thus Jenner, in the course of his observations immediately to be mentioned, thought that the Cuckow's egg is usually hatched first, but he knew of one instance to the contrary (p. 228, note).

† For instance where he states (p. 221) that the Cuckow's dupe "whilst she is sitting, not unfrequently throws out some of her own eggs, and sometimes injures them in such a way that they become addle."

hatched the eggs or young, if such there were, of its foster-parent disappeared from the nest, of which the interloper remained the sole tenant, but the way in which they were got rid of was wholly unsuspected until ascertained by Jenner. Some people believed with Lottinger that the parent Cuckow was the author of their destruction,* others supposed that they were smothered by the disproportionate size of their fellow-nestling and their corpses cast out by their own parents. By a succession of experiments, the particulars of which it is here impossible to give, Jenner learnt that the young Cuckow, alone and unaided, was the agent, and it was in June 1787 that he ascertained this fact. On the 18th of that month he examined a Hedge-Sparrow's nest, which then contained a Cuckow's egg and three eggs of its owner. Inspecting it the next day he found therein a young Cuckow and a young Hedge-Sparrow, and as it was so placed that he could distinctly observe what went on in it, he, to his astonishment, saw the former, though so lately hatched, in the act of turning out its companion:—

"The mode of accomplishing this was very curious. The little animal with the assistance of its rump and wings, contrived to get the bird upon its back, and making a lodgement for the burden by elevating its elbows, clambered backward with it up the side of the nest till it reached the top, where resting for a moment, it threw off its load with a jerk, and quite disengaged it from the nest. It remained in this situation a short time, feeling about with the extremities of its wings, as if to be convinced whether the business was properly executed, and then dropped into the nest again. With these (the extremities of its wings) I have often seen it examine, as it were, an egg and nestling before it began its operations; and the nice sensibility which these parts appeared to possess seemed sufficiently to compensate the want of sight, which as yet it was destitute of. I afterwards put in an egg, and this, by a similar process, was conveyed to the edge of the nest, and thrown out. These experiments

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* Yet in 1782 Lottinger himself had personal proof of the expulsion of an egg from the nest by a young Cuckow (Hist. du Coucou d'Europe, p. 18).

I have since repeated several times in different nests, and have always found the young Cuckoo disposed to act in the same manner. In climbing up the nest, it sometimes drops its burden, and thus is foiled in its endeavours; but, after a little respite, the work is resumed, and goes on almost incessantly till it is effected. It is wonderful to see the extraordinary exertions of the young Cuckoo, when it is two or three days old, if a bird be put into the nest with it that is too weighty for it to lift out. In this state it seems ever restless and uneasy. But this disposition for turning out its companions begins to decline from the time it is two or three till it is about twelve days old, when, as far as I have hitherto seen, it ceases. Indeed, the disposition for throwing out the eggs appears to cease a few days sooner; for I have frequently seen the young Cuckoo, after it had been hatched nine or ten days, remove a nestling that had been placed in the nest with it, when it suffered an egg, put there at the same time, to remain unmolested. The singularity of its shape is well adapted to these purposes; for, different from other newly-hatched birds, its back from the *scapulæ* downwards is very broad, with a considerable depression in the middle. This depression seems formed by nature for the design of giving a more secure lodgement to the egg of the Hedge-sparrow, or its young one, when the young Cuckoo is employed in removing either of them from the nest. When it is about twelve days old, this cavity is quite filled up, and then the back assumes the shape of nestling birds in general."

This remarkable habit of the young Cuckow has been so abundantly confirmed by the testimony of unimpeachable eye-witnesses in many countries, and in England among others by Montagu and Mr. Blackwall, whose names are a sufficient guarantee for the accuracy of their observations, that the unbelief in Jenner's statements, hinted or openly expressed by some zoologists is hardly to be justified by the most ardent supporter of absolute proof.* In 1872 a lady published* an artistic sketch, taken from life, of the callow, blind, but far from helpless young Cuckow in the act of heaving one of its foster-brethren—a Titlark some days older than itself—over the side of the nest.†

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* It is painful to find Waterton one of the strongest impugners of Jenner's word, and, without any warrant, declaring dogmatically in a letter to Ord

It not unfrequently happens that two Cuckows' eggs ‡ are deposited (presumably by different birds) in the same nest. Of one such instance that came under Jenner's observation he writes:—"June 27, 1787. Two Cuckoos and a Hedge-sparrow were hatched in the same nest this morning; one Hedge-sparrow's egg remained unhatched. In a few hours after, a contest began between the Cuckoos for the possession of the nest, which continued undetermined till the next afternoon; when one of them, which was somewhat superior in size, turned out the other, together with the young Hedge-sparrow and the unhatched egg. This contest was very remarkable. The combatants alternately appeared to have the advantage, as each carried the other several times nearly to the top of the nest, and then sunk down again, oppressed by the weight of its burthen; till at length, after various efforts, the strongest prevailed, and was afterwards brought up by the Hedge-sparrows." On the other hand it must be mentioned that in a case recorded by

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"He never saw what he relates." Mr. Gould, though once (B. Eur. pt. xix.) admitting the possibility of the young Cuckow's shouldering out its companions, in 1864 (B. Gr. Brit. pt. v.) held the old belief that they were ejected by their own parents; but the evidence of Mrs. Blackburn, being suitably brought to his notice, induced him to confess (*op. cit.* Introd.) that his former opinion was erroneous.

* 'The Pipits, illustrated by J. H. B.' [Mrs. Blackburn] pl. 11 (Glasgow: 1872). The sketch was adapted to form one of Mr. Gould's plates (B. Gr. Brit. pt. xxv.), but not, it would seem (Nature, ix. p. 123), too accurately, and was reproduced by him (*op. cit.* Introd.) as well as by Mr. Harting (Summer Migrants, p. 239).

† The passion for evicting the tenants of a nest is shewn by an observation of Herr Brucklacher (Zool. Garten, 1868, p. 154), who, having set at opposite ends of a window-sill a young Cuckow and a nest full of young Bullfinches, saw the former after some time crawl straight across to the latter, climb up the nest, and possess himself of it, though the resistance of its occupants made him take a couple of hours to perform the feat.

‡ Mr. E. C. Moor records (Zool. s.s. p. 2344) the successive taking of three Cuckow's eggs from the same Wagtail's nest, used three times in the same season. These he supposes to have been laid by the same Cuckow, but it does not seem that two eggs were ever in the nest simultaneously.

Herr Adolf Müller (Zool. Garten, 1868, pp. 345-349) the larger of two Cuckows in the same nest perished, and Mr. H. Turner (Mag. Nat. Hist. viii. pp. 287, 288) knew of two that throve in company for the ten days he was able to observe them.

The young murderer having thus become the only object of the solicitous cares of his foster-parents, thrives and grows very quickly, leaving the nest in about a fortnight or less,* being by that time completely fledged, though his wings and tail have not reached their full dimensions. Yet nearly as long as he remains in the land of his birth his wants are anxiously supplied by the victims of his mother's dupery. Their actions when he attains his full stature become almost ridiculous, for they have often to perch between his shoulders to place in his gaping, up-turned mouth the delicate morsels he is too lazy or too stupid to take from their bill. The time during which he is thus supported by his foster-parents has not been determined, but it seems to last for some weeks. At length however he begins to shift for himself, and then follows the elders of his kin to more southern climes, though it appears certain that he does not accompany them on their migration, for nearly all the old Cuckows, as has been said, leave this country by the middle of July, and are hardly ever seen in August, while the young have been observed at the end of that month or even at the beginning of September. Indeed Mr. Rodd sent word that he had known them remain in Cornwall till October; Thompson was informed of two shot near Tralee on the 5th, and Mr. Curtler (Zool. p. 2455) records one shot near Worcester on the 14th of that month.

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* If taken when about that age the Cuckow is not hard to rear in captivity, especially if its keeper delegates the duty of satisfying its inordinate appetite to a cage-companion, for something of what may be called "fascination" is exercised by the young monster, which no bird that is wont to feed its own helpless offspring seems able to resist. Indeed cases are known of the foster-parents being voluntarily assisted in their task by other birds when all are at liberty. In confinement the Cuckow is not amiable, and though it has been kept not unfrequently through the winter, has moulted its nestling's feathers, and, according to some, has been heard to utter its well-known cry, it seems never to have been known to pick up its own food.

To what cause we may attribute the parasitism of the Cuckow is at present beyond our knowledge; and, when so many other cases of the same habit throughout the whole range of Natural History are remembered—cases in comparison with which that of this bird, though presenting some peculiar characters, is by no means remarkable—it would be vain, as premised, to indulge in conjectures on the subject. Yet a few of the explanations which have been proposed require notice here, if only to shew their futility. First is that of Hérissant (Mém. de l'Acad. R. des Sci. 1752, pp. 417–423, pls. 15–17) who supposed that Cuckows do not hatch their own eggs because their stomach lies behind the sternum and beneath the bowels, forming a protuberance which would make incubation inconvenient. This suggestion, which found favour with Dr. Opel (Journ. für Orn. 1858, pp. 205, 285) was, however, long ago shewn by White, in his thirtieth letter to Barrington, to be insufficient, since a Nightjar, which unquestionably broods its eggs, has a similar arrangement of the viscera—a fact that has since been observed in many other birds that incubate. Prof. Schlegel, in 1831, arrived at the conclusion that the peculiar nature and effect of the Cuckow's food produces an enlargement of the stomach, and at the same time affords but little nutriment, whence follows a constant hunger, which, he thought, influences the development of the eggs in the ovary; while the bird, incessantly occupied in search of sustenance, has no time for incubation, and would have still less the means of provisioning its young if it had to feed them. Moreover the eggs being produced but slowly, and at comparatively long intervals, the earliest of them would be spoilt before the last was laid, and finally the young would not be in a sufficiently advanced condition to perform their migration.* These allegations have been disposed of by Macgillivray (Brit. B. iii. pp. 123, 124), who found that the stomach of the two common North-American Cuckows was

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* Prof. Schlegel's views have been adopted by some of the latest biographers of this species, Dr. Altum (Journ. f. Orn. 1866, pp. 165–171) and M. O. des Murs in his work 'La Vérité sur le Coucou' (Paris: 1879).

"precisely similar" in structure and position to that of our own bird, and yet those species perform maternal duties. The Author of the present work seems to have thrown out a more valid hint when he suggested first in 1828, in a note in Jennings's 'Ornithologia' (p. 138), and more fully in a communication to Blyth, printed in his edition of White's 'Natural History of Selborne' (Introd. p. iii.), that the small size of the sexual organs in this bird, and particularly of the blood-vessels which supply them, with the probably low state of excitement consequent thereupon, may diminish the interest attached to the providing for the wants of the young. But it must be borne in mind that in many cases we really know not which is cause and which is effect, so that there is always a risk of mistaking the one for the other, and in the present instance it may be quite as reasonable to suppose that the small size of the organs in question may be the result of diminished parental affection, as the converse.

To return to the egg of this bird. It has long been known to be variable in colour. This was Jenner's opinion (Phil. Trans. 1788, p. 227), though he was ignorant of the amount of variability attributed to it by former writers, and in recent times the subject has given rise to a long controversy. It may be stated, however, that in this country Cuckows' eggs have scarcely ever been observed to differ to the extent asserted by some foreign oologists. With the exception of two, mentioned by Mr. Cordeaux and Mr. A. C. Smith (Zool. s.s. pp. 1285, 3516), which were blue, British specimens are ordinarily of a pale greyish-green or reddish-grey, more or less closely mottled with darker markings, spots or specks of different sizes, and also suffused with patches of a lighter shade. They measure from ·95 to ·78 by from ·78 to ·61 in. Ælian, who flourished in the second century, declared that the Cuckow did not lay her eggs indiscriminately in the nests of all birds, but only of those that she knew to produce eggs like her own, which from their similarity would thus not be recognized or suspected.* In 1767, Salerne, evidently not knowing what Ælian had said, reported with doubt (L'Hist. Nat. &c. p. 42) the assertion of an inhabitant of Sologne to the effect that the hen Cuckow lays her eggs precisely of the same colour as those in the nest of which she makes use.* The statements of these authors were commonly rejected as absurd by those who referred to them; but in 1853 a similar belief was independently and prominently professed by Dr. Baldamus (Naumannia, 1853, pp. 307–325), and after some time became known in this country.† Most English ornithologists, like the majority of their continental brethren, were sceptical of its truth, as the former might well be, since no likeness whatever is ordinarily apparent in the familiar case of the blue-green eggs of the Hedge-Sparrow and that of the Cuckow which is so often found beside it. Dr. Baldamus based his belief on a series of eggs in his cabinet,‡ whence he subsequently figured (Naumannia, 1854, pl. 5, p. 415) a selection of sixteen specimens to illustrate his observations.§ However the matter is to be explained, it seems impossible, save on one supposition, to resist the testimony these specimens, and others of a like kind, afford. This one supposition is that the eggs in question have been wrongly ascribed to the Cuckow, and that they are only exceptionally large examples of the eggs of the birds in whose nests they were found; for it cannot be gainsaid that some such monstrous examples are occasionally to be met with. In opposition to that view is to be urged the

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* This statement has not been accurately represented by some authors who have referred to it, as for example De Montbeillard (Hist. Nat. Ois. vi. p. 309),

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and from him M. des Murs (*op. cit.* p. 69). The passage (*De Nat. Animal.* III. xxx.) is too long to extract; but its real meaning is as above. Some of the examples Ælian cites are very inappropriate, so that his statement is of little value except as shewing the antiquity of a belief which most persons suppose to be of very recent origin.

* "Pour ce qui est de l'assertion d'un autre Solognot, qui dit que la femelle du Coucou pond son œuf précisément de la même couleur que ceux du nid qu'elle adopte, c'est une chose incompréhensible."

† Chambers's Journ. Pop. Lit. Science and Art, No. 208, 26 Dec. 1857, viii. pp. 410, 411; Ibis, 1865, pp. 178–186; Wilts. Mag. x. pp. 115–130; Zool. s.s. pp. 1146–1166.

‡ In 1861 he kindly shewed this series to the Editor.

§ Another most interesting series of sixteen eggs has been beautifully figured by the owner, M. Nicoud, in illustration of a paper by M. de Rougemont (Bull. Soc. Sc. Nat. de Neuchatel, xi. pp. 509–517, pl.).

well-known fact that abnormally-large eggs are mostly deficient in depth of colour and in stoutness of shell, neither of which characters is observable in Dr. Baldamus's specimens; and, that, though no doubt more precise and delicate examination than any to which they seem to have been subjected were desirable, some other evidence in favour of his having rightly assigned them is to be considered. Thus Herr Braune at Greitz shot a hen Cuckow as she was leaving the nest of an Icterine Warbler, and found (Naumannia, 1853, pp. 307, 313) in the oviduct of the former an egg coloured very like that of the latter, while on looking into the nest he saw there an exactly similar egg, which there can be no reasonable doubt had just been placed there by that very Cuckow.* Again, Herr Grunack (Journ. für Orn. 1873, p. 454) has since found one of the most abnormally-coloured specimens—a blue one—to contain an embryo so fully formed as to shew the characteristic zygodactyl feet of the bird, thus proving incontestibly its parentage.† Now both of these being extreme cases, the question is worthy of serious attention, but we must also bear in mind the far more numerous instances in which not the least similarity can be traced, as in the very common case of the Hedge-Sparrow already mentioned, and if we attempt any explanatory hypothesis it must be one to fit all round. But any such hypothesis must needs be based mainly on speculation, and that, as before stated, would be here out of place.* It is however especially necessary to guard against the error, into which some writers have fallen, of supposing that the Cuckow has the power of diversifying the colour of her eggs at will; that, having laid it, she should look at it, and then decide into what bird's nest she should put it; or further that its colour can, in any mysterious way, be affected by the action of external objects on her perceptive faculties. Such suppositions are wholly unreasonable. The assimilation†, if such there be, must be involuntary on her part, and its only object be to render it less easily recognized by the foster-parents as supposititious. This and nothing more is the "theory" of Dr. Baldamus. It remains to say that, in depositing her eggs, the Cuckow (vagrant though she be) will, season after season, resort to the same spot, or as near thereto as may be. Among many instances of this fact which might be cited, it will be sufficient to refer to Mr. Gurney's statement, on Mr. E. Fountaine's authority (Zool. s.s. p. 3648), that a pair of Pied Wagtails nested twice every season with a single exception for eight or nine years, ending in 1871, in the ivy on a particular garden-wall, and that in each of those years a Cuckow invariably laid her egg in their second nest. In 1872 the Wagtails changed their site, and though the Cuckow was several times seen in the garden, it seems she did not discover their nest. In 1873 they returned to the ivy, but no Cuckow's egg was laid.

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* Herr von Homeyer (Ornith. Centralblatt, iii. p. 75) has objected to this statement as relating an impossibility, arguing that in no bird do the fully-coloured eggs follow each other so quickly that two such are simultaneously ready, and least of all in the Cuckow, where the intervals of laying are presumably long ; but Herr Braune's statement is supported by the evidence of Saxby (Zool. pp. 8165–8168), who shot a Cuckow carrying an egg which she must have laid some time previously, and afterwards discovered a second and perfect egg in her ovary. A case almost exactly parallel is cited by Thompson (B. Irel. iii. pp. 442, 443) on the authority of Kinahan, corroborated in certain particulars by Mr. J. Haughton, the late Mr. R. Ball and Prof. Allman. Here an egg which the bird was carrying in her mouth, was seen by the first two of these gentlemen to fall from it, while two full-grown eggs, one of them ready to pass into the oviduct, were found on dissection by the last witness. The often-repeated assertion that Cuckows' eggs are only laid at several days' interval cannot therefore be accepted unconditionally.

† The like fact is recorded by Mr. Seebohm (Zool. 1880, p. 361).

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* Yet an hypothesis has been proposed (Encycl. Brit. ed. 9, vi. pp. 686, 687), which in outline is this:—Some birds resent interference with their nests much less than others: among the former is the Hedge-Sparrow, and in her case no assimilation is needed, in others it may be wanted. The tendency of habits to become hereditary is admitted, and since it is probable that a Cuckow commonly puts her eggs into the nest of the same species, it is no violent supposition that her posterity should have the same habit. Again, the family likeness between the eggs laid by the same individual is unquestionable, and therefore the habit of laying a particular style of egg is probable to be hereditary also. Combining this supposition with the last, it will be seen that on the principle of "Natural Selection" the asserted facts would follow. This principle would operate most strongly in species which are not easily duped, that is in the cases which occur least frequently. Here it is we find it, for Cuckows' eggs deposited in nests of the Red-backed Shrike, the Redstart, the Icterine Warbler, and the Great Bunting approximate most nearly to the eggs of those species—species in whose nests the Cuckow rarely (in comparison with others) deposits eggs. The assimilation of the eggs of the Great Spotted Cuckow (the species next to be described) to those of the birds in whose nests they are found, is in some cases very remarkable, and will in due time be mentioned.

† This word, like "mimicry", as implying the idea of consciousness, is open to objection on the part of those who do not know its technical meaning. That idea must be excluded from both words, whenever either is employed by a naturalist.

The food of this species on its arrival here seems to consist of insects generally, and then the inner surface of its gizzard is smooth, but it soon begins to live almost wholly on hairy caterpillars, such as appear to be eaten by scarcely any other bird, and the hairs with which they are clothed accumulate in its stomach, either aggregated into a globular mass, or insinuated, through muscular action, into its epithelium, and arranged in a regular spiral direction, so as to coat it completely, whence hasty observers have thought that this organ naturally has a hairy lining. The microscope, however, has shewn this to be a mistake, and revealed its true origin. In the stomach of the young also is often found a ball of hairs, which Jenner thought must have been obtained from, and swallowed while the bird was in, the nest; but the ordinary food of the nestling is of course such as its foster-parents would supply to their own offspring, and accordingly varies somewhat with the species to which they belong. This includes not only insects of almost every kind, and in every stage, which form the chief part, as well as small snails, but also soft corn, vetches, the tender shoots of grasses, and a few seeds—generally those of a *Galium*. Masses of dry grass have also been found in the stomach of the young, sometimes so large as apparently to cause its death (Zool. s.s. p. 3314).

Little need be added as to the well-known song of the Cuckow.* The curious change which takes place in its note has already been mentioned, and is the theme of a quaint epigram by one of our minor poets†. The chirp of the young is plaintive, and has been likened to that of both the Hedge-Sparrow and the Titlark, but the bird has also a strange, loud, rattling note, which it will at times utter (at least in confinement) without any apparent cause.

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* For the musical expression of its notes reference may be made to Prof. Oppel's paper (Zool. Garten, 1871, pp. 33–41).

† John Heywood (*circa* 1587–1598)—'The sixth hundred of Epigrammes.' No. 95 "Of vse." Here it may be said that want of space forbids the Editor

The Cuckow is commonly distributed every summer over the greater part of Europe and its islands, including the whole of Ireland, the Hebrides and Orkney. Shetland it visits not infrequently, and breeds there; but in the Færoes it is only recorded to have appeared thrice, and it is not known to have reached Iceland. It occurs also in the wooded parts of Norway as high as lat. 70° 20′ N., as well as on the Varanger Fjord, but not every year. About Archangel it is common, and thence it is found across Northern Asia, regard being had to the growth of vegetation which accommodates the insects that form its food, to the shores of the Pacific, while examples from Japan seem to be specifically identical. It is common throughout China according to the season, and in winter extends very far to the southward, having been obtained in Celebes by Mr. Wallace (Ibis, 1866, p. 359), in

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from dwelling on the fact that for six hundred years English versifiers, good, bad and indifferent, have made this bird a favourite theme. Mr. Chappell (Ballad Literature &c. i. pl. i. pp. 21–24) has given from the Harleian Manuscripts (No. 978) a *fac-simile* of a song of the thirteenth century—"the earliest secular composition in parts, known to exist in any country"—which hails the coming in of summer and has for its burden "Sing cuccu." Passing over the many passages in which Shakespear, Milton and other great poets have happily celebrated this bird, there belongs to the last century an "Ode to the Cuckoo", of disputed authorship (*cf.* Brit. Quart. Rev. lxi. pp. 500–513), one of the most beautiful pieces in our language. The same reason here excludes quotation of the numerous popular rimes relating to this bird, but as one set (which has many variations) of these has been printed in former editions of this work the fullest version of the doggrel may be here inserted:—

In March he leaves his perch,
In April come he will,
In May he sings all day,
In June he changes his tune,
In July he's ready to fly,
Come August go he must,
In September you'll him remember,
But October he'll never get over.

For old superstitions and legends relating to the Cuckow reference may be made to Grimm's 'Deutsche Mythologie' (ed. 2, 1844, pp. 640–646—abstract Ann. N. H. xiii. pp. 403-405); Broderip's 'Zoological Recreations' (pp. 68–81); 'Notes and Queries' (almost every volume); Prof. Gubernatis's 'Zoological Mythology' (ii. pp. 226–236); and M. Rolland's 'Faune Populaire de la France' (ii. pp. 82–99).

Eastern Timor, in the Andamans, and in Ceylon—though twice only according to Capt. Legge.* In South Africa it has been found wintering in Natal on the East coast,† and in Damara-land on the West, besides several other localities nearer the equator, until to the northward it becomes as common a bird as it is in Europe—its season of abundance, however, always alternating with our own. It has been observed in the Canaries and in Madeira, but is probably not a regular visitant to either. Within the limits thus indicated it seems to occur more or less plentifully in all suitable districts, but everywhere it appears to be of migratory habits, while many of the more southern, allied forms are, in comparison if not wholly, stationary.

The adult Cuckow has the bill bluish-black, passing into yellow at the base and edges : gape, orbits and irides deep yellow : upper parts generally bluish-grey ; wing-quills rather darker, and barred with white on the broad inner web for about three-fourths of their length ; tail-quills greyish-black, tipped with white, and sparsely spotted along the shaft and near the inside, forming a series of incomplete white bars. A slight green gloss is often perceptible in the feathers of the upper surface. Chin and neck ash-grey ; breast, belly, and inner wing-coverts, white, barred with black ; vent and lower tail-coverts, white, often tinged with buff, and barred, but less thickly, with black : legs, toes and claws, gamboge-yellow.

The whole length is about fourteen inches ; the wing, from the carpal joint to the tip, eight inches and three-quarters; the first primary nearly three inches shorter than the second, which varies in its proportion to the fourth.

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* It must be observed that in Asia and its islands there are several allied species, some of them inhabiting India, which, on a cursory examination, may be readily mistaken for *Cuculus canorus*.

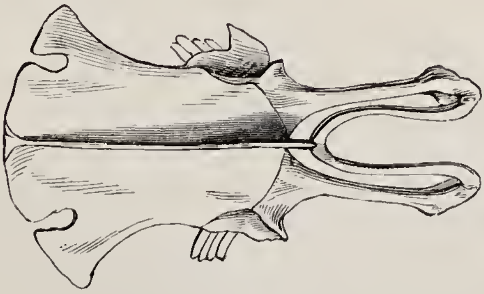
† The *C. canorus* recorded by Desjardins (Proc. Zool. Soc. 1832, p. 111) from Madagascar and Mauritius is no doubt the nearly-allied *C. rochi* (*op. cit.* 1862, p. 224), which, though greatly resembling the former, has a very different song (Ibis, 1863, p. 453). Mr. Dresser regards this as specifically the same as *C. canorus*, which seems to be an erroneous view, and MM. A. Milne-Edwards and Grandidier (Ois. de Madagascar, i. p. 176, pl. 66) treat it as a variety of the Indian *C. poliocephalus ;* but that has dark irides, while those of the Madagascar bird are said on good authority to be orange, though M. Grandidier asserts the contrary. Other allied species are also found in Africa.

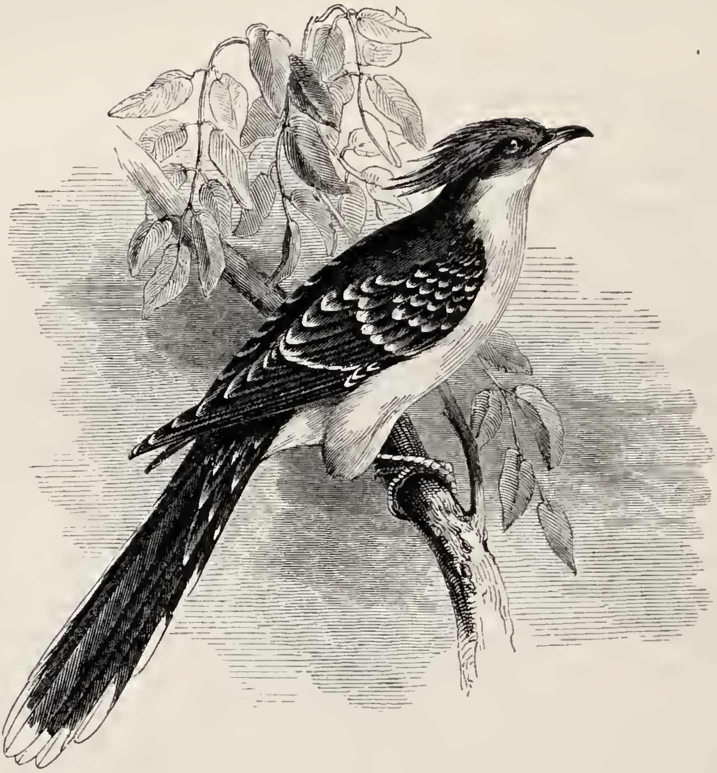
The female is commonly a little smaller than the male, but there is no other outward distinction of sex.

Young birds in their first plumage have the irides brown: the upper parts generally, except a white spot on the nape, clove-brown, barred with brownish-red, wing- and tail-quills clove-brown, the former barred on the outer web with brownish-red, and on the inner with white, the latter barred irregularly with brownish-red and interruptedly with white; neck, breast, and lower parts, dull white, often tinged with buff, and more or less closely barred with blackish-brown. In this stage they form the *Cuculus hepaticus* of some authors.

Certain examples, presumably young, put on a plumage very different from that generally assumed, and such individuals have been described as forming a distinct species under the name of *C. rufus*. One of them shot at Doddington in Kent, about 1850, and now in the Cambridge Museum, is of a dull, light red or pale cinnamon-colour, rather closely barred, except on the upper tail-coverts, with dull blackish-brown: the tail has the tip white, but perhaps a little less clear than usual, while the chin, throat, and upper part of the breast are much as the upper parts, but paler and with a finer barring, and the breast and belly are dull white with fewer and thinner bars; the lower tail-coverts are pale buff.

The vignette represents the sternum of this species.





Coccystes glandarius (Linnæus*).

THE GREAT SPOTTED CUCKOW.

Cuculus glandarius.

Coccystes, *Gloger*†.—Bill moderate, compressed towards the tip, culmen decurved, cutting edge smooth; lower mandible slightly decurved beneath; gape moderate. Nostrils basal, oval, the upper part closed by a membrane. Head crested. Wings moderate, with ten primaries, the first short, the third longest, but the fourth nearly its equal, the ninth as long as, and the tenth shorter than, the first. Tail long, of ten feathers, the outer three pairs graduated, the middle two nearly equal. Tarsi strong and long, bare behind, slightly feathered in front above; toes two before, two behind.

The late Mr. R. Ball in 1843 briefly noticed (Ann. Nat. Hist. xii. p. 149) the occurrence in Galway of an example of this species, which he had seen, then the property of

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* *Cuculus glandarius*, Linnæus, Syst. Nat. Ed. 12, i. p. 169 (1766).

† Vollst. Handb. der Naturgesch. der Vög. Eur. p. 449 (1834).

Mr. Creighton, of Clifden, and subsequently sent the Author further particulars, to the effect that the bird was caught alive by two persons on the island of Omagh, where, pursued by Hawks, it flew for refuge into a hole in a stone fence.* It appeared fatigued, weak, and emaciated, as if after a long flight; but lived for four days, attempts being made to feed it on potatoes. The specimen, which Thompson thought to be an adult, was afterwards obtained for the Museum of Trinity College, Dublin, but has since perished. Another specimen, the first known in Great Britain, was recorded (Zool. s.s. p. 2344) as having been shot in Northumberland in 1870, and Mr. Hancock states (B. Northumb. &c. p. 27) that it was killed near Bellingham on the North Tyne, August 5th of that year, and afterwards presented to the Newcastle Museum.†

This species was first described and figured in 1743 by Edwards (Nat. Hist. Uncomm. Birds, ii. pl. 57) from an example shot at Gibraltar by Catesby's brother, and is a regular summer-visitant to the Iberian peninsula, in some parts of which it is common, while it appears accidentally, almost always in spring, in the south of France,‡ though unknown in the rest of that country. It is said, however, to have occurred on two occasions in Germany. The first of these was recorded in 1820, by the eldest Brehm, who stated (Beiträge, i. p. 501) that one, of two seen, was shot many years before near Lübben in Lusatia: the second, in 1837, by Hornschuch and Schilling (Verz. der in Pommern vorkomm. Vögel, p. 12) and by Herr E. F. Homeyer (Syst. Uebers. Vög. Pommerns, pp. 9, 10) as having been shot in August, also many years before, near Teterow in Pomerania, and taken to Herr Pauly, who sent it to the Greifswald Museum, where it still is (Journ. für. Orn. 1876, p. 117). Herr Finger included the species in his 'Ornis Austriaca' (Verhandl. z.–b. Ver. Wien, 1857, p. 562) from an example, prepared by him, which was sent in the flesh from Croatia to Prince Richard Khevenhüller in 1856, as the Editor is kindly informed by Herr von Pelzeln. Von Nordmann records (Faune Pont. p. 209) a specimen killed in Bessarabia, the only one known to him in the Russian empire. Several examples, say Drs. Hartlaub and Krüper (Griech. Jahresz. 1875, p. 184), have of late years been killed in Attica, and the latter adds that it is common in Asia Minor. Col. St. John found it breeding near Shiraz, the most eastern locality it is yet known to reach. It is by no means rare in parts of Palestine, though never in great numbers, and, as in all countries not lying to the south of the Mediterranean, a summer-visitant only. In Egypt, on the contrary, it is, according to Capt. Shelley, a resident, and both there and in Nubia may be met with abundantly. Indeed, it seems to occur over the greater part of Africa, becoming however less plentiful towards the south, and being very rare within the Cape Colony, though not uncommon in Damara-land. It has also been obtained at various places on the west coast, and, according to Webb and Berthelot (Orn. Canar. p. 25), it occasionally visits the Canaries. In Barbary it is a regular summer-visitant, arriving there, as it does in its other haunts at the same season, earlier than its better-known relative—Drake (Ibis, 1867, p. 425) having seen it at Tangier, January 10th. In Savoy and Italy it is of very rare occurrence, but it has occurred both on the mainland and in Sicily, as also in Malta.

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* There is much discrepancy as to the date of the occurrence. Ball writing (*ut suprà*) July 19, 1843, gives "last spring." In the Second Edition of this work (ii. p. 201) the Author, from Ball's subsequent information, stated "about Christmas, 1843"—an obvious error as to the year, and corrected in the Third Edition (ii. p. 206) to "1842." Thompson, however, asserted (B. Irel. i. p. 364) that "The month of March, 1842, is said to have been the time of its capture."

† In the last Edition of this work another instance was mentioned; but, looking to the authority cited (Zool. p. 3046), it will be seen that the statement refers to the Great Spotted *Woodpecker*.

‡ The details of its appearance are not very precise. Vieillot (Faune Franç. p. 60) says that several examples have been found in Languedoc in different years, and Roux that others have been found in Provence. Crespon, in 1840, mentioned (Orn. Gard, pp. 268, 269) having killed a fine male near the Rhone in May, 1837, and that the next day two were seen not far from the same place by a farmer, who shot one of them and sent it to him, while another had been lately killed near Montpellier. One netted in that neighbourhood is also recorded by MM. Jaubert and Barthélemy-Lapommeraye (Rich. Orn. p. 338). Lacroix says (Ois. Pyrén. Franç. p. 273) it is a very rare and irregular visitor to the Eastern Pyrenees, and he particularizes one he received May 2nd, 1870.

Until 1853, no certain information as to the most important part of this species's habits had been published.* But in that year Dr. A. E. Brehm made known (Journ. für Orn. 1853, pp. 144, 145) the result of the observations made in 1850 by himself, his late brother Oscar, and Dr. Vierthaler, to the effect that in Egypt it was parasitic upon the Grey Crow (*Corvus cornix*)†, and its eggs were figured by Bädeker (*tom. cit.* Extrah. p. 117, Taf. v. Fig. 4). In 1857 Canon Tristram, with Messrs. Hudleston and Salvin brought from Algeria (Ibis, 1859, pp. 76–78, 316–318) several specimens, found in nests of the Moorish Pie (*Pica mauritanica*), and two of them were figured by Hewitson (*tom. cit.* pl. ii. figs. 1, 2); but the first of these gentlemen was some time before he could persuade himself that the bird evaded all parental duties. His subsequent experience, however, of its habits in Palestine following upon that gathered meanwhile in Egypt by Allen (*op. cit.* 1862, p. 357; 1863, p. 363) and Mr. Cochrane (*tom. cit.* 361), and in Spain by Dr. A. E. Brehm (Journ. für Orn. 1861, p. 393) and Lord Lilford (Ibis, 1866, pp. 177–179, 183, 184 and 381) convinced him (*tom. cit.* p. 281) of its absolute parasitism, and was subsequently confirmed by Mr. E. C. Taylor (*op. cit.* 1867, p. 55) in Egypt, and again in Spain by Mr. Saunders (*op. cit.* 1869, p. 401) and Mr. Dresser. No doubt indeed can now exist as to the fact, and the notes of these observers give a pretty full account of its way of breeding. It lays its eggs very early in the year, and, so far as is known, always in the nest of one of the *Corvidæ*[*]—in Egypt and Barbary the species already named being chosen as the foster-parents of its offspring, but in Spain both the Pies of that country (*Pica rustica* and *Cyanopica cooki*). It seems commonly to impose two of its eggs on the bird whose nest it invades, and, though there is evidence that it will on occasion destroy some of those of the owners, there is none to prove that its progeny evicts theirs—the young of both parents having been several times found to all appearance in peaceful occupation of the same cradle. More than this, perhaps, cannot be safely averred, and thus, notwithstanding the excellent contributions to the history of this species above cited, a good deal evidently yet remains to be learnt. The eggs are of a pale greenish-blue, blotched and spotted with light brown and dull lilac. Their shell, generally thin, is not unfrequently beset with pimples and rugosities, such as are often seen on that of imperfectly developed eggs. They measure from 1·28 to 1·18 by from ·99 to ·94 in.[†]

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* In 1767 appeared Gerini's posthumous 'Storia Nat. degli Uccelli', wherein are figured both the adult and immature of this bird, as though distinct species (pls. 70, 71), and the latter is stated (i. p. 81) to have nidified among bushes at Pisa, in 1739, to have had four young, and to have been never seen since—a manifest error, as Dr. Salvadori (Uccelli d'Italia, p. 42) remarks; but on this authority was based the Pisan Cuckow of Latham (Syn. i. p. 520), and hence Gmelin's *Cuculus pisanus*. Though the species was found to be abundant enough in Egypt by the French naturalists, its mode of propagation was unknown to them (Audouin, Descr. de l'Egypte, xxiii. p. 333). Drs. Krüper and Hartlaub ascribe the discovery of its breeding to Herr Gonzenbach, without however stating the year in which he made it. From his own observations (Journ. f. Orn. 1861, pp. 238, 239) he had certainly not ascertained the truth in 1858.

† This interesting paper was translated by Mr. Sclater (Zool. p. 3987).

The food of this species consists almost entirely of insects in various stages, but Allen found a bit of egg-shell (presumably that of a Common Fowl) in the stomach of one example, and there is other evidence, though perhaps not of the strongest, as to its occasional oophagy. It is said to have three distinct notes—one, which has been syllabled *kee-ou, kee-ou*, somewhat like that of the common Cuckow, and possibly peculiar to the male, a short grating alarm-cry *cark*, and an angry *wurree, wurree*, whence is doubtless derived its Arab name "Burroo-burroo."

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[*] There seems to be a possibility (Ibis, 1859, p. 78; 1866, p. 282) of the Southern Little Owl (*Carine glaux*) being also utilized for this purpose, as well as the Syrian Jay (*Garrulus melanocephalus*), according to Canon Tristram.

[†] The first eggs obtained by Canon Tristram's party, from nests of the Moorish Pie, so curiously resembled those of the latter, that they were unsuspiciously assigned thereto, and their real nature not recognized before they were unpacked in England some months afterwards. That naturalist and his friends, practised oologists as they were, were unaware of the treasures they were collecting until, on emptying an egg supposed to be that of *Pica mauritanica*, the zygodactyl structure of the embryo extracted revealed the truth (Ibis, 1859, pp. 78, 316, 317). The important bearing of this fact on the "assimilation" question in regard to eggs of the common Cuckow should not be overlooked.

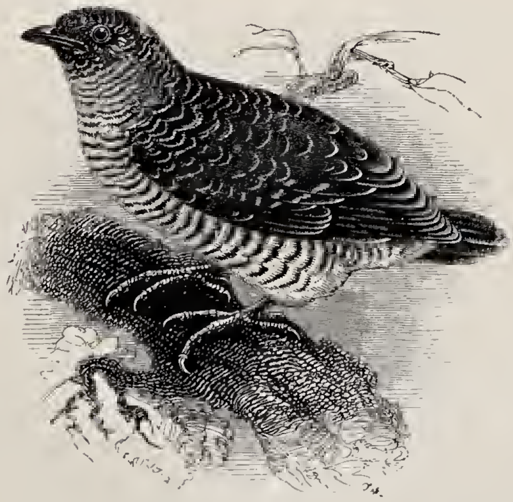
The male has the bill purplish-black with the base of the lower mandible yellow beneath: the orbits yellow: the irides brown: the head and cheeks are dark ash-grey, the shaft of the crest-feathers black; the rest of the upper parts greyish-brown, many of the feathers broadly tipped with white; wing-quills dull hair-brown, with the hidden part of most of the primaries rusty, and tipped with white; tail-quills darker greyish-brown, tipped with white, the middle pair glossed with green; lower parts generally white, tinged with yellow, especially on the throat and sides of the neck: legs, toes and claws, bluish-black.

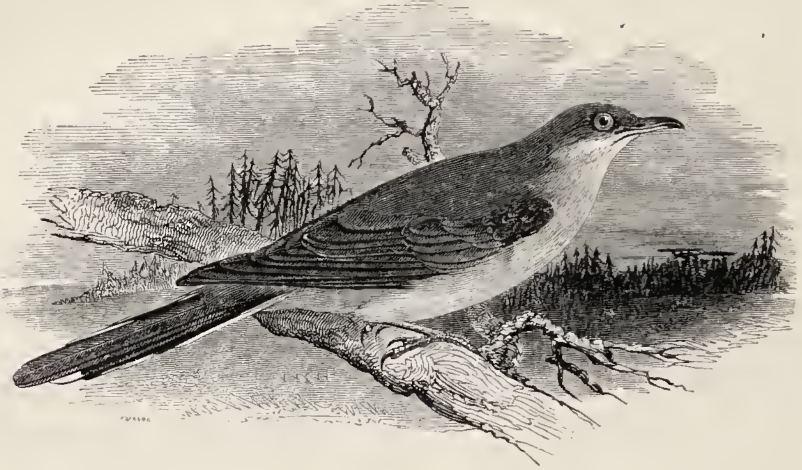
The whole length is from fifteen and a half to sixteen inches, of which the tail alone measures about nine; the wing from the carpal joint eight inches and a quarter.

The female differs from the male in having the primaries chestnut, except at the tip.

Considerable difference is shewn by the young, in which the head is blackish-brown instead of grey, and the whole of the upper surface is much darker, while the chin and throat are of a deeper yellow, verging upon orange.

The vignette represents the young of the common Cuckow.





Coccyzus americanus (Linnæus*).

THE AMERICAN YELLOW-BILLED CUCKOW.

Coccyzus Americanus.

Coccyzus, *Vieillot* †.—Bill long, much compressed at the sides; culmen considerably decurved; cutting edge quite smooth; lower mandible decurved beneath. Gape moderate. Nostrils basal, linear-oval, half-closed by a membrane. Wings short, with ten primaries, the first short, the third longest. Tail very long, of ten feathers, graduated. Tarsi strong, short, bare behind, feathered in front and on the outside above; toes two before, two behind.

The first notice of the occurrence in Britain of this American bird was published in January, 1833 (Field Naturalist, i. pp. 6, 7), the late Mr. Ball making known, under date of October 20th, 1832, the capture of two specimens:—one (which was there figured) shot in the autumn of 1825 near Youghal, in the county of Cork, and brought to him while still warm and bleeding; the other but recently shot at Old Connaught, near Bray, and in the possession of Glennon, the well-known bird-stuffer at Dublin. What became of the latter is unknown, but the former, after having been exhibited to the Zoological Society of London by Thompson (Proc. Zool. Soc. 1835, pp. 83, 84), was placed in the Museum of Trinity College, Dublin, whence it has lately disappeared. Meanwhile a third example had been procured in Britain, having been shot near Stackpole Court, in Pembrokeshire (Zool. p. 3046), also in the autumn of 1832. This was submitted to the same Society (Proc. Zool. Soc. 1833, p. 26) by Lord Cawdor, who then gave it to the British Museum, where it now is, and the preceding figure was drawn from it. The occurrence of a fourth British-killed specimen, obtained in Cornwall, was announced in 1835, by Temminck (Man. d'Orn. iii. p. 279) and by Mr. Jenyns (Man. Br. Vert. p. 155) on the information of the Author, but further particulars respecting it are wanting.* Since that time Mr. Dresser exhibited to the Zoological Society (Proc. Zool. Soc. 1871, p. 299†) a young male, found dead in a wood by the sea, at Wallog, near Aberystwith, October 26th, 1870, and sent him by its present possessor, Capt. Cosens; while Mr. Murray Mathew informs the Editor that he believes a sixth was picked up dead beneath the light-house on Lundy Island, in October, 1874, and taken to Mr. H. G. Heaven for determination.‡

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* *Cuculus americanus*, Linnæus, Syst. Nat. Ed. 12, i. p. 170 (1766).

† Analyse d'une nouv. Orn. p. 28 (1816).

This bird was originally described and figured by Catesby

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* Mr. Eyton seems to have been in error, when, writing in 1836, he said (Rarer Br. B. p. 24) that "Five or six specimens appear to have occurred in the United Kingdom."

† The note contains some errors, here corrected through Capt. Legge's kindness.

‡ Another example was said (Zool. s.s. p. 2943) to have been killed in Ireland; but Lord Clermont soon after (p. 3022) referred the specimen to the American Black-billed Cuckow (*Coccyzus erythrophthalmus*), which it proved to be (Proc. Zool. Soc. 1872, p. 681). The bird was shot at the end of September, 1871, at Kilbead in the county Antrim. Only one other instance of its occurrence in Europe seems to be recorded, namely, by Dr. Bolle (Journ. f. Orn. 1858, p. 457), the specimen having been obtained in the plains near Lucca in 1858, and being in the Museum at Pisa, where Baron de Selys-Longchamps saw it (Ibis, 1870, p. 452), as testify also Dr. Salvadori (Ucc. d'Ital. p. 43) and Savi (Orn. Ital. p. 299). Its admission as a "British Bird" is not to be countenanced, but it may be useful to point out that while generally resembling its congener, *C. americanus*, *C. erythrophthalmus* differs by having the bill wholly black, a bare red space round the eyes, the back browner and no rufous on its wings.

(Nat. Hist. Carol. i. p. 9, pl. ix.) as the "Cuckow of Carolina", and hence became known to the naturalists of the last century; but, except a few particulars (which prove to be in the main correct and were apparently furnished by Dr. Garden) published by Pennant (Arct. Zool. ii. p. 265), little was known of its habits until the time of Wilson. They have since been elucidated by a succession of American ornithologists, and though of course more details remain to be determined, the chief facts of its history are now as well established as those relating to almost any bird, for the species is plentiful in some places throughout most of the eastern States of the Union, and is in them scarcely less an object of interest than is our own Cuckow with us.

Arriving in North America in the spring its loud cry, *cow, cow, cow,* many times repeated, is heard from the thickest foliage of the orchard, and as the bird is commonly supposed to be most clamorous in anticipation of wet weather, it in many parts of the country obtains the name of "Rain-Crow."* The cocks, as usual, arrive first, and after a few days are followed by the hens. They soon begin their nest, which is generally built in a low tree, and consists of but a scanty platform of dry twigs, artlessly bestrewn with a few grass stalks. On this the hen lays her egg and, in most cases it would appear, broods it at once, though laying eight or ten more eggs subsequently, the young being hatched in succession (just as often happens with some Owls) and the later fostered by the warmth of their earlier brethren. More than four eggs are said to be seldom found in the nest at once, and these will be in different stages of development, as is also the case with the young. The parents, though delegating part of their duty to the elder members of their family, are surpassed by no birds in solicitude and affection for their progeny. While the hen is sitting, the cock is usually not far off and gives the alarm on the approach of danger, and, when this is seriously threatened, one or both will try to with-draw attention from their offspring, fluttering and tumbling on the ground as though wounded. Conjugal love is also shewn in like manner, for Mr. Edward Newton mentions (Ibis, 1859, p. 149) that having shot a male which fell shrieking, the female instantly flew to the spot, and by feigning lameness endeavoured to lead his pursuer astray. Yet this species seems sometimes to intrude upon the economy of others, as first noticed by Nuttall, who says he had found its egg in the nest of a Cat-bird (*Mimus carolinensis*) as well as in that of the American Robin (*Turdus migratorius*), in the latter case together with two of the owners' eggs. On each occasion he believed that the mere appropriation of the nest was the invader's intention. Until lately no other writer had mentioned any similar instance, but in 1877 Mr. A. M. Frazar informed Mr. J. A. Allen (Bull. Nuttall Club, ii. p. 110) of this Cuckow laying in a Robin's nest, and also in that of a Wood-Thrush (*T. mustelinus*), while Mr. Ridgway states (*op. cit.* iii. p. 165) that eggs of both species of North-American Cuckow were found in Illinois in the same nest.* The eggs of this present bird have a dull and somewhat soft chalky shell of a uniform pale sea-green colour, and measure from 1·25 to 1·18 by ·98 to ·91 in. Towards the end of summer both old and young retire southwards from their breeding-haunts in North America, though some are said to winter in Florida.

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* In Wilson's time it seems to have been also known as the "Cow-bird," but that name is now generally applied to *Molothrus pecoris*—the especially parasitic bird of North America.

In South America this species has been found by Mr. Hudson to reach Buenos Ayres (Proc. Zool. Soc. 1872, p. 496), and examples have been obtained by different collectors at various places in the more northern part of that continent. Léotaud says it is a common visitant to Trinidad in winter, and at the same season it appears throughout Central America and Mexico. It is known to occur in several of the Antilles, as Jamaica†, Cuba, Porto Rico and St. Croix—in which last it was found breeding by Mr. Edward Newton. Its appearance to the west of the Rocky Mountains, long ago asserted by Nuttall and Townsend, was subsequently doubted, but has since been fully established by Mr. Cooper (Ornith. Calif. i. p. 372) and others. On the eastern side it commonly ranges from the Missouri plains to the Atlantic, and northward to Ontario and New Brunswick; but, though Audubon says he observed it in Labrador, it does not seem to reach Newfoundland. Mr. Dresser records one, on Herr Benzon's authority, as having occurred at Julianehaab in Greenland, in 1874. It occasionally visits Bermuda, and Wedderburn and Mr. Hurdis noticed its arrival there, October 9th, 1849, in an extraordinary flight of thousands, most of which disappeared the following day. On the continent of Europe only one example is known, which, says M. Alph. Dubois (Bull. Ac. R. Belg. ser. 2, xxxix. pp. 9–11), was killed at Bois-de-Lessines in Hainault, October 22nd, 1874—the same season, be it remarked, in which the supposed specimen was obtained on Lundy Island.

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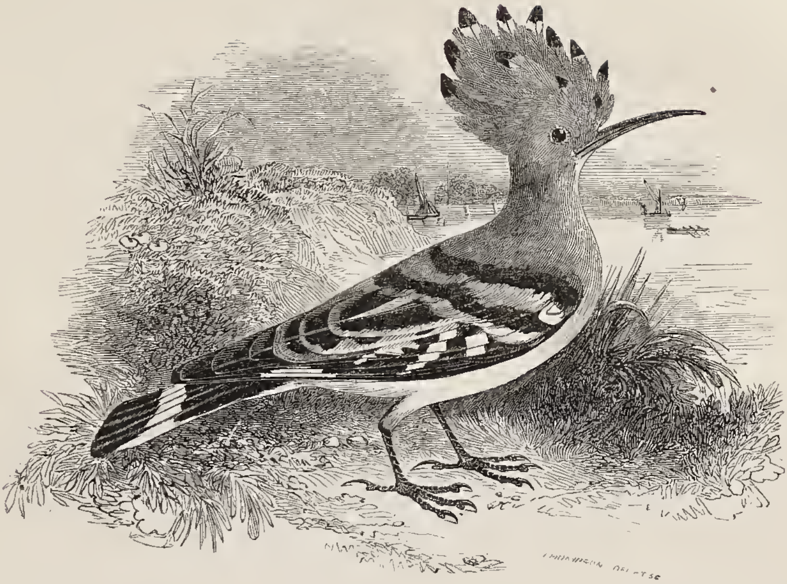
* It is to be regretted that further details of these cases, so exceedingly interesting in their bearing on the habits of our own Cuckow, were not published.

† The Jamaican bird has been described as distinct under the name of *C. bairdi* (P. Z. S. 1864, p. 120), and that from Sombrero as *C. julieni* (Ann. Lyc. N. H. New York, 1864, p. 42), but neither seems really to differ from the true *C. americanus*.

The bill has the upper mandible brownish-black, inclining to yellow at the base; the lower yellow except at the tip, which is dusky: the irides are brown: the upper part of the head, neck and body, the wing-coverts and the two middle tail-feathers are mouse-colour, the last being tipped with dark-brown, and having the shaft rufous; the wing-quills are brown, the primaries tinged with reddish, and, except the exterior pair, have the hidden part chestnut; the remaining tail-feathers are blackish-brown, tipped with white, increasing in extent on each pair from the middle outwardly, and on the exterior occupying nearly all the outer web; the chin, throat and lower parts are white, the sides of the neck tinged with ash-grey: legs, toes and claws, lead-colour.

The whole length is about twelve inches, from the carpus to the tip of the wing five inches and five-eighths; the first primary shorter than the second.

The sexes hardly differ; but the young are easily distinguished by having the tail-quills dusky, with the white tip smaller and less well defined.



UPUPA EPOPS, Linnæus[*].

THE HOOPOE.

Upupa epops.

UPUPA, *Linnæus*[†].—Bill long, slender, slightly arched, sharp and much compressed. Nostrils basal, oval, partly concealed by feathers. Tongue very short, and heart-shaped. Head with an erectile crest of oblong feathers set regularly in pairs for the whole length. Wings moderately long, very broad, with ten primaries, the first about half as long as the second, which is nearly an inch shorter than the third, the fourth or fifth longest, but the sixth nearly equal to them. Tail of ten feathers, almost square at the end. Feet with the tarsi scutellated behind as well as before; toes three before, one behind, the outer and middle united as far as the first joint; claws but slightly curved.

So remarkable is the appearance of the Hoopoe, that on being seen in this country it is nearly always followed to the death, as though it were a great prize; yet it is by no means rare with us, since not a year passes without examples being obtained; and its occurrence has been recorded in more than three-fourths of the English counties,* in both North and South Wales, in Ireland and Scotland, while in all the counties on our southern and eastern coasts it has been many times killed. Turner, in 1544, said that, so far as he knew, it was not found in Britain; but in 1667 Merrett (Pinax, p. 173) announced its occurrence in the New Forest and in Essex, and the next year Charleton (Onomasticon, pp. 92, 93) described and figured one killed ten miles from London in the winter of 1666–7. Sir T. Browne soon after, as it would seem, wrote that he had often seen this "gallant marked bird" (presumably in Norfolk), adding, "'tis not hard to shoot them." Willughby noticed examples procured in Northumberland and Surrey, and Plot others observed in Oxfordshire; while, in 1684, Sibbald (Hist. Anim. Scotl. p. 16) recorded it from the Scottish border and Orkney. In the first half of the last century Albin and Edwards recorded more specimens obtained in England, as did Charles Smith (State of Waterford, Ed. 2, p. 237) one shot at Stradbally in Ireland, during the great frost of 1739. Being a regular summer-visitant to Europe, the Hoopoe is mostly seen in spring in the British Islands, but it is by no means uncommon in autumn, and is occasionally observed in winter, as shewn by two of the records just cited. Hunt also mentions having had specimens which were shot in November and December; Graves (Nat. Journ. i. p. 22) one killed at Musselburgh in February, 1832; and Blyth (Mag. N. H. ser. 2, ii. p. 595) one that occurred in Scilly in January, 1837; another was found dead, but quite fresh, in Suffolk in the beginning of December, 1846 (Zool. p. 1693); and according to Jardine's communication to Mr. Harting two were shot in Dumfriesshire in the winter of 1870–1.

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[*] Syst. Nat. Ed. 12, i. p. 183 (1766).

[†] *Loc. cit.*

That this species, if not so uselessly molested, would yearly breed in this country there can be little doubt. White, writing in 1767, said that a pair frequented the ground adjoining his garden for some weeks in the summer, and seemed disposed to breed in his outlet, but were frighted by boys, who would never let them rest; and, on Tunstall's authority, Latham (Gen. Syn. B. Suppl. pp. 122, 123) mentions a pair that a few years before (1787) had begun a nest in Hampshire, which being disturbed they forsook;* as well as a fully-fledged young bird killed in Kent and sent him, May 10th, 1786. Blyth noticed (Field Nat. ii. p. 53) a pair that haunted a garden at Tooting in the summer of 1832, until they were shot; and Jesse (Gleanings, iii. p. 148), in 1835, said that some years before a pair built their nest and hatched their young in a tree at Parkend, near Chichester. The like was reported to Mr. A. C. Smith (Wilts. Mag. ix. p. 54) as having happened at Rodburn-Cheney, in Wiltshire, and the following year the birds built again, but the eggs were destroyed. Mr. J. P. Bartlett recorded (Zool. p. 564) a supposed case of the Hoopoe's breeding near Dorking in 1841; and Mr. Saunders communicated a note to Messrs. Sharpe and Dresser to the effect that, in 1847, a pair nested in the hole of a yew at Leatherhead, where, being protected by the owner, they successfully brought up their young, to the number (it was believed) of five, and rewarded him by displaying themselves with their progeny on his lawn.† There seems to be no evidence of the Hoopoe being otherwise than a straggler in the rest of the United Kingdom, but it occurs not unfrequently in Scotland from West Galloway to Sutherland—seven or eight times in Aberdeenshire alone, according to Mr. Gray, at least thrice in Shetland and once in North Uist.‡ It appears from time to time in all quarters of Ireland, Thompson, in 1849, having given a list of more than two scores of instances, and there is little doubt that it has since continued to visit that kingdom, though details of its occurrence may be wanting.*

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* Those which seem not to be yet stained with its blood are Huntingdon, Rutland, Derby, Monmouth, Hereford, Worcester, Warwick, Chester and Westmoreland, but their innocence is doubtless only a matter of time.

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* This information, given in Tunstall's own words by Fox (Syn. Newc. Mus. p. 61), possibly refers to the Selborne incident recorded by White.

† Some other instances in which this bird is supposed to have bred in England are recorded by Mr. More (Ibis, 1865, p. 137) as reported to him. In Johnes's "Birds of Dartmoor," published by Mrs. Bray (Description of the Part of Devonshire bordering on the Tamar and the Tavy, ed. 1, i. p. 350; ed. 2, i. p. 305) a nest with four young, taken many years ago at Morwell, near Tavistock, is mentioned.

‡ Beside the Scottish counties named already, it seems to have visited Berwick, Ayr, Renfrew, Fife, Perth, and Banff.

The conspicuous plumage of the Hoopoe, together with its familiarity towards man in countries where it is unmolested, render it an attractive object to travellers.† When no danger threatens the cock sits on a bough, a stump or a wall, uttering his simple love-song *hoo, hoo, hoo,*‡ puffing out his throat and striking his bill against his perch at each note; or he parades the ground with a stately walk, his head bowing at every step, and his crest alternately lifted and lowered, in a slow and graceful manner. Nor does the bird wholly drop this deportment when engaged in feeding, though that occupation quickens its pace and often leads it to the most undignified spots in search of the worms or grubs there to be found abundantly, either by probing the soil or by stamping on the earth and so making them come to the surface. As each animal appears it is seized—if it be small, it is jerked into the air, adroitly caught again and gulped down; if it be large, it is beaten against the ground, and then, by a sudden throwing-back of the head, made to fall into the open gape—but the bill is always raised aloft in the act of swallowing. Though the bird generally seeks its living amid the most obscene refuse, there are places in which it finds food of a less impure origin, as Mr. Greenhow (Mag. Nat.

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* It seems to have appeared most frequently in Wexford, Waterford, and Cork, but occasionally in Kerry, Limerick, Clare, Galway and Antrim.

† When the former editions of this work appeared the habits of this bird, as well as of the two whose history next follow, had been studied by but few of our countrymen, and the Author had to write from very insufficient sources of information. A great change has since taken place in this respect, and so far as general habits can be observed theirs have been by many excellent field-workers in many different lands. The wealth of materials offered to a compiler is now very great, as regards all three species, and it can hardly be doubted that the impulse given by these earlier had much to do with its acquisition.

‡ Sometimes syllabled *hoop*, *hoop*, *hoop* or *hoo*, *poo*, *poo*. The sound seems to be produced by expelling the air from the dilatable œsophagus. From this cry comes the name which the bird bears in many widely-differing languages. The French *Hupe*, or as now commonly written *Huppe*, is often thought to refer to the tuft of feathers which is so characteristic of the species; but according to M. Littré (Dict. de la Langue Franç. i. p. 2067) is but a secondary meaning of the word, and the tuft is named from the bird, not the bird from the tuft.

Hist. vii. p. 155) observed it examining the pollard willows and poplars near Bordeaux for the sake of the insects which infest their decaying trunks. Beetles of many kinds and in every stage, as well as caterpillars are also eaten, and Capt. Sperling (Ibis, 1864, p. 282) saw it in Rhodes hawking in the air for flies. The Hoopoe is not commonly credited with much power of wing, yet this fact and that of its affording the falconer a good flight,* to say nothing of the vast distances it traverses in its yearly migrations, and of its generally wandering habits,† prove that to be far greater than has been supposed. Ordinarily, however, it is seen to fly but little, merely flitting in an undulatory course from one feeding-ground to another near by, or mounting to some place where it may cleanse its bill from the soil that has accumulated thereon while digging. It is seldom found far from the shelter of trees or buildings, for its timidity is great. It flinches from the swoop of a passing Swallow, and on the appearance of a Hawk, or even a Crow, say Bechstein and Naumann, it squats on the earth, spreading its tail and wings, so that the latter almost meet in front, and throws back its head, pointing the bill upwards, in which strange posture it remains till the danger is over. Yet as regards its own kind it is courageous enough, and in spring the cocks fight violently, leaving, says Necker, the ground covered with their feathers.

With all its dignity and beauty, the Hoopoe possesses, as has been stated, some very unpleasant peculiarities, and these are intensified during the breeding-season. The eggs are usually laid in a hollow tree, wall or stone-heap,‡ sometimes, it would seem, without any bedding, but often the old nest of a Starling or other bird is used, or possibly fresh twigs, grass and the like are added. The Hoopoe, however, is not content with this: the furnishing of its nursery is nearly always completed by introducing some of the foulest material that can be conceived; and the hen, it would appear, scarcely ever leaves the nest for the sixteen days of her incubation, the cock assiduously feeding her at the hole's mouth. Things become worse when the young are hatched, for their fæces are discharged all around, producing, in warm climates especially, an indescribable stench.* The eggs, from four to seven in number, are of elongate form, with a dull surface minutely pitted, the sides of the hollows shewing white, but otherwise uniform in colour. When first laid, says Lord Lilford, they are of a fine pale greenish-blue; but, as ordinarily seen, some are of a lavender-grey, others pale olive, while again others have a distinctly reddish tinge. They measure from 1·08 to ·96 by from ·74 to ·68 in.

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* The late Mr. Newcome told the Editor of a flight in which both Hawk and Hoopoe mounted out of sight, and so quickly that his informant, a Dutch falconer, said it was as though they had been "pulled up to the sky by ropes."

† Bishop Stanley says (Fam. Hist. B. ii. p. 67) that "one approached a vessel in the middle of the Atlantic, and kept company with it for a good way, but did not settle on board, which it probably would have done had it been tired."

‡ Pallas (Zoogr. Rosso-As. i. p. 434) mentions an extraordinary site for a nest:—"Zarizyni in domo extra urbem sita, diu non habitata, intra ipsas latrinas pullos educaverat Upupa, et licet tunc hominum frequentia turbata, postero anno tamen ad eundem nidum rediit." He adds that he found another nest, with some young, "qui foetidissimo ichore ex ano ejaculato se defende-

The Hoopoe soon becomes tame in captivity, and even, it is said, strongly attached to its keeper, while its lively actions render it an amusing tenant of the aviary. But without great care it does not long endure prison-life, and one of its chief requirements seems to be plenty of sand in which it can roll itself. Blyth states (Mag. Nat. Hist. ser. 2, ii. p. 597) that in 1838 a pair "built and incubated" in the menagerie at Knowsley. Notwithstanding its nauseous mode of feeding, this bird, which towards autumn becomes very fat, is deemed a delicacy in many parts of the south of Europe, and especially by the Greeks of Constantinople. To Jews and

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bant," in the chest of a rotting corpse that had been loosely covered with stones. In China, says Swinhoe (Ibis, 1860, p. 49), Hoopoes often breed in the holes of exposed coffins, whence the people call them by a name meaning "Coffin-bird."

* Some of this is denied by Naumann, but, it would seem, by him alone, and the assertions in the text are corroborated by many witnesses. In Central Germany, where his observations were chiefly made, it is indeed probable that matters are not so bad as in more southern countries, and it is quite likely that if a pair of Hoopoes were again suffered to breed with us they would not be found to be any nuisance to their neighbours. Certainly in the few instances recorded, no disgust appears to have been felt, and no complaint made. However, "Sale comme une Huppe" is a French proverb.

Mahometans it is by law forbidden as unclean. Of the part played by the Hoopoe in Egyptian and classical mythology, and in the traditions and pharmacopœia of the Arabs, there is not here space to tell.

This bird in summer has several times wandered to the most northern parts of Norway, and in 1868 one was taken in Spitsbergen, but in Scandinavia it has been only known to breed in Denmark—though not recently, in the extreme south of Sweden and in Gottland and Œland. It is but rarely observed in Finland, and in Russia does not seem, according to Dr. Sabanejev, to go northward of the Jaroslav Government, though abundant in the south, and on the Asiatic border hardly attains lat. 60° N. Further eastward its northern limit has not been laid down, but it is very common in Western Siberia, is found in Dauuria, even on the high plains, and thence through Amoorland to the Pacific. It is included among the birds of Japan, and in China occurs from Pekin to Canton, being resident in parts at least of that empire. To the south its range is as yet ill-defined, for Messrs. Sharpe and Dresser incline to believe that the Hoopoe of the Indo-Chinese countries may be specifically separated under the name of *Upupa longirostris;* but the true *U. epops* is certainly found throughout India, though perhaps only as a winter-visitant—what is believed to be a third species, *U. indica*, being the perennial form in that country.* Thence our Hoopoe prevails throughout South-western Asia to Egypt and Nubia, where it is resident. In Abyssinia as also in Senegal it seems to occur only in winter, but its southern limits in Africa require further investigation.† North of the Sahara *U. epops* is very abundant; it is common in the Canaries, and occurs in Madeira and the Azores. Throughout the Mediterranean islands it is a well-known bird-of-passage, and it is a summer-visitant to the greater part of the continent of Europe, but mostly very local in its distribution, and in some countries, as Germany and Denmark, says Prof. Reinhardt (Vid. Meddel. 1874, p. 117, note), a decrease has been noticed in its numbers for many years past.

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* Another reputed species, *U. nigripennis,* inhabits Southern India and Ceylon, but Messrs. Sharpe and Dresser unite it to *U. indica.*

† From Zambesia on the east to Benguela on the west *U. epops* is replaced by what the authors last named term a distinct and excellent species, *U. africana* (*U. minor* and *U. decorata* of some writers), which extends to the Cape of Good Hope. A very closely-allied form, *U. marginata,* seems to be peculiar to Madagascar.

In the adult the bill is nearly black, with the lower mandible flesh-coloured for about a third of its length at the base: the irides are brown: the crest is of a rich buff, the feathers, which, when the crest is lowered, extend behind the eye, being broadly tipped with glossy bluish-black, and some two or three pairs of the longest, which are those about the middle, have a whitish bar in front of the black tip;* the sides of the head and back of the neck, purplish-buff; the mantle greyish-brown, bounded abruptly by a black semicircular band, followed by a similar one of white, and then a second black one; rump white, upper tail-coverts black, sometimes edged with buffy-white; the tail black with a conspicuous white chevron, point foremost, across it; feathers covering the carpal joint rich buff; wing-coverts black, broadly tipped with more or less buffy white; primaries glossy bluish-black, the outermost of each side with a white spot on its inner web, the next six with a broad white bar extending across both webs, the remaining three with a white spot on the inner web only; the secondaries and tertials black with four or five conspicuous white bands, and most of them edged and tipped with more or less buffy white, the innermost being banded only on the inner web and that obliquely;† the chin, throat, breast and belly pale buff, often with a vinous tinge, the flanks shaded with brown; lower tail-coverts white: legs and toes brown, the claws black.

The whole length is about twelve inches, of which the bill measures about two inches and a quarter; from the carpal joint to the tip of the wing five inches and five-eighths.

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* Occasionally the frontal feathers are tipped with black, and a black bar is sometimes seen in front of the whitish one.

† Very considerable differences in the proportion and the disposition of the black and white on the wings are observable in individuals, and perhaps more reliance than is warranted has been placed on these markings as characteristic of the various so-called species of the genus.

The sexes differ but little externally; the female is, however, rather smaller, and less brightly coloured.

The young are said by most observers to be at first covered with white or light grey down, but Swinhoe states that in China they are hatched naked. The feathers are developed within a blue sheath, which on bursting leaves them almost exactly similar to those of the adult, and the crest is conspicuous before the birds are fully fledged. The bill is at first very short, and appears not to attain its full length till some time after they have left the nest.

The vignette gives a view of Fulham church, near which, according to Mr. Gould, a Hoopoe was shot by Mr. Sullivan, September 28th, 1832.*

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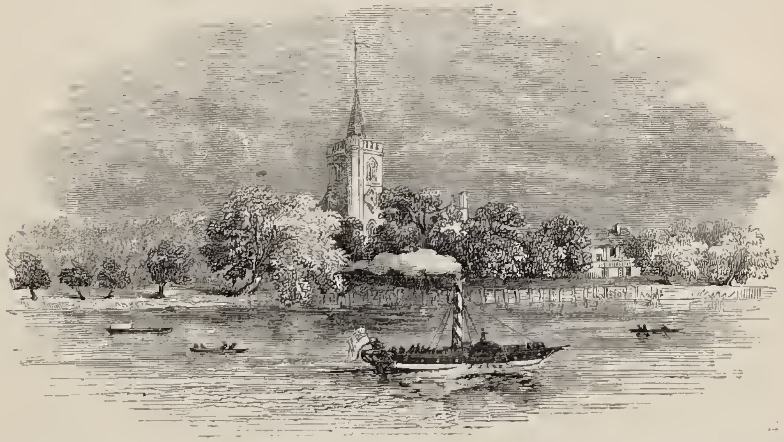
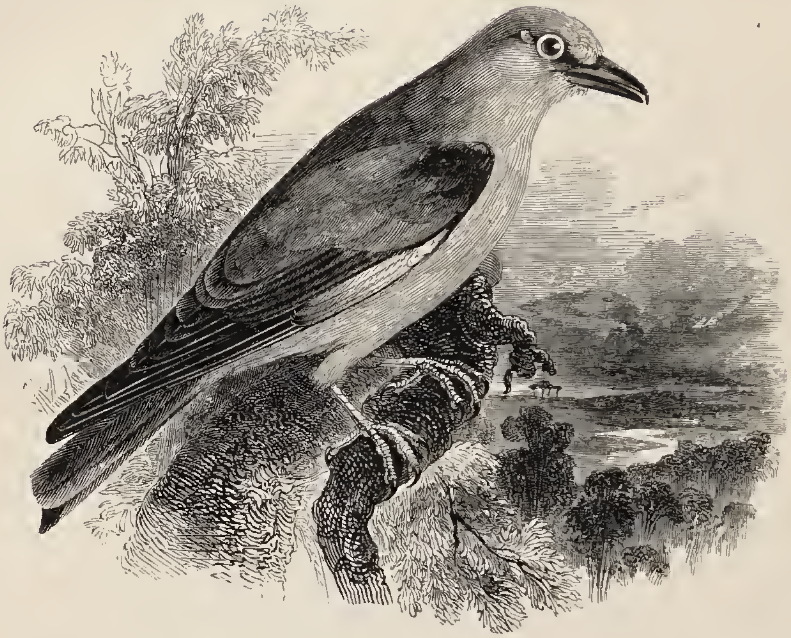
* Turner, in 1544, gave "houupe" as the English name of this bird, though he said that, so far as he knew, it was not found anywhere in this country, remarking that most British writers when they used the word *Upupa* meant by it the Lapwing.





Coracias garrulus, Linnæus*.

THE ROLLER.

Coracias garrula.

Coracias, *Linnæus*†.—Bill stout, hard, compressed, with cutting edges slightly inflected; upper mandible decurved at the tip; gape wide. Nostrils lateral, linear and oblique, partly hidden by a plumose membrane. Lores beset in front by a row of stiff bristles. Postocular space bare. Wings long, of ten primaries, the first a little shorter than the second or third, which are the longest, but rather longer than the fourth. Tail of twelve feathers, rather long. Tarsi short, broadly scutellated in front; toes free, three before, one behind; claws stout.

The Roller comes in spring to North Africa and Europe from the interior of the continent first named, whither it retires in autumn to winter, and is abundant during its double passage on most of the Mediterranean islands. The earliest recorded notice of its occurrence in this country is by Sir Thomas Browne, who left a description, now in the

[*] *C. garrula* (errore), Linn. Syst. Nat. Ed. 12, i. p. 159 (1766).

[†] *Loc. cit.*

British Museum,* of a specimen, killed near Crostwick in Norfolk, May 14th, 1644, and sent by him to Merrett. The next known appearance of the species with us, is mentioned by Wallace, who in 1700 (Account of the Islands of Orkney, pp. 48, 49) sufficiently described an example, killed two or three years before in Sanda, and received by him. Both these occurrences were unknown to Pennant, when he, in 1768, as if for the first time, introduced the species to our fauna (Br. Zool. ed. 2, i. p. 176, note; App. p. 487), stating on the information of Borlase, that one was shot near Helston in Cornwall in the autumn†, and mentioning another, "seen at large in our island," which may have been that recorded in 1752 by Hill (Hist. Anim. p. 389) as observed by him in Charlton Forest in Sussex. These four seem to be the only examples known in Britain till the present century, since which time about one hundred have been recorded, the greater number of them having occurred not only in maritime counties, but within a short distance of the coast. The reason of this is not far to seek. The conspicuous plumage of the Roller challenges observation and therefore, according to the custom of this country, pursuit. One may safely say that hitherto scarcely an example has ever been seen here without its death being compassed, and generally accomplished. A bird of such rare beauty has thus but a few hours to live after reaching our shores. Following the many records along the coast of Great Britain, we find that five or six examples belong to Cornwall—all but one to the Land's-End district, four to Devon, one to Dorset, four to Sussex and as many to Kent, one to Essex—and that, strange to say, on its inland border, about ten to Suffolk, thirteen or fourteen to Norfolk, two or three to Lincolnshire, seven to Yorkshire, two to Durham, eight to Northumberland; one to the east of Scotland—presumably in the lowlands; Perth and Aberdeen one each, Banff two, Elgin and Inverness one each, Sutherland one or two, Caithness one, Orkney nine or ten, Shetland two or three, St. Kilda one, Ayr one; and, returning to England, Cumberland, Lancashire, Flintshire and Somerset one each. Of English counties not bordering on the sea we have one for Hertfordshire and one for Cambridgeshire; and of Scottish, Lanarkshire one and Dumfriesshire two; while six or seven have occurred in Ireland. These records give an average of more than one appearance in each year, and when the paucity of observations during the early part of the century is considered, that average will be at once seen to be below the mark. Making also allowance for occurrences that take place without being noticed in any Natural-History journal, it is obvious that ornithologists need not account the appearance of the Roller any extraordinary event, but simply one that is to be expected annually. Though many of the records, on which these results are founded, do not mention the date of observation, this information is given in enough instances to allow of its being said that the majority of appearances is in the autumn-months—chiefly September and October, next to which this species may be looked for in May or early June. In the former case the birds have doubtless either nested or been bred during the preceding summer in the northern parts of Europe, and in the latter they have as doubtless been on the way to their breeding-quarters in that direction. There are however a few exceptional cases deserving remark. A bird is recorded by Mr. Stevenson as having been shot in Norfolk in February 1824, and several are said to have been observed in the height of summer. The example killed so early in the year had possibly failed to accomplish its normal migration southward, and had contrived to maintain its existence in our northern lands throughout the winter, while those that have occurred about midsummer have probably failed in their search for a suitable home, and have thus wandered to our shores.* There is no reason to suppose that the Roller, unlike the Hoopoe, has ever bred, or attempted to breed, with us.

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* This is on a separate paper (MS. Sloan. 1830, fol. 31) appended by Wilkin to Browne's 'Account of Birds found in Norfolk,' as though it had formed part of that treatise. That Browne sent the bird to Merrett appears by another paper in the same volume (fol. 42).

† Of 1766, says Pennant; but of 1765 according to Borlase's own note as since printed (Journ. Roy. Inst. Cornw. no. iv. suppl. p. 41).

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* Newman, in his edition of Montagu's 'Dictionary', says that the Flintshire bird, already mentioned, was killed Feb. 1st, 1858; but his authority (Zool. p. 5976) gave no date for the incident, and as the communication is dated Jan. 22d, 1858, the assertion must be wrong.

The Roller is described as a shy bird and generally unsociable in its habits, choosing its haunts in a partially wooded district, and perching on tall trees, flying from one dead branch to another; but continually on the watch, and from time to time uttering very harsh and varied cries, one of which has been syllabled *rack, rack-kack.* It seeks its food, however, consisting chiefly of beetles and frogs, on the ground. It usually migrates in flocks, which gradually disperse after it has reached its summer-quarters. Canon Tristram describing some (Ibis, 1866, p. 81) which he had good opportunities of observing in spring for several days at Jericho, says that shortly before sunset "a few of the birds would start from their perch, and commence a series of somersaults overhead, somewhat after the fashion of Tumbler-Pigeons.* In a moment or two they would be followed by the whole flock, and these gambols would be repeated for a dozen times or more." A similar performance is gone through by the cock, while the hen is sitting, for in fine weather he will rise high in the air and suddenly let himself fall, turning completely over and uttering a harsh cry at the same time, repeating the gesture more than once before he resumes his perch. The nest is commonly placed in a hollow tree, from eight to fifteen feet from the ground, but failing such accommodation, a hole in a bank or wall is occupied, as noticed by many observers. In Northern Europe the Roller, as Wolley found, uses some bedding of roots and grass, or even feathers and hair, for its eggs; but Mr. Salvin says that those seen by him in Algeria lay on nothing softer than chips of the dead wood, and the same was observed by Mr. Buckley in Sweden. Both sexes are said to share the duty of incubation, which lasts about three weeks. The eggs are from four to six in number, often globular in shape, of a glossy translucent white and measuring from 1·52 to 1·22 by from 1·19 to 1·05 in.

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* Sir C. Fellows made the same comparison in Asia Minor many years ago (Ann. Nat. Hist. iv. p. 213). The late Sir George Lefevre, author of the anonymously-published 'Life of a Travelling Physician' (ii. p. 130) noticed in Podolia how that Rollers "roll along in their flight," and it would seem that the bird acquired its name from this habit, Gesner writing in 1555 (Hist. An. iii. p. 674), that about Strasburg "*Roller* uocatur per onomatopœiam, ut audio, in aere perquam alte uolat."

The Roller has strayed to the Færoes, and even to the Varanger Fjord, but it occurs only rarely in Southern Norway, and has not been known to breed there. In some parts of Sweden, however, it appears yearly in summer, as far as lat. 61° N., and as regularly breeds, especially near Calmar, where, and in Œland, it is not uncommon. It is also said to visit Gottland, but it is still rare in Finland, and only occurs in the south and east of that country. In Russia it perhaps gets a little further northward, having been seen about Lake Onega, but it seems to be scarce about Perm, though becoming commoner in the south of the Empire. Eastward it extends to the valley of the Irtisk, where it is plentiful, but it is not seen in Eastern Siberia. It inhabits Persia, Afghanistan and North-western India, sharing these countries with its congener *Coracias indicus*, with which it is said frequently to interbreed. Returning westward it has been obtained in Arabia ; and it seems to pervade the whole of Africa as far as the Cape Colony; but proof of its reported occurrence in Madagascar is needed. It has been observed on some of the islands in the Gulf of Guinea, but not in those off Cape Verd, or other groups in the Atlantic. In many parts of Mauritania it breeds commonly, as it also does in Spain, but it would seem to be less numerous in Portugal. In France its appearance is said to be very casual, for it does not occur annually even in Provence. In Belgium it has the same character for irregularity as with us, and in Holland is rarer still. In Italy it is said to be uncommon, but it occurs every year, and is known to breed in some places. It resorts to many parts of Germany, especially Pomerania, and it visits Denmark, and though scarce breeds there.* As regards Europe, the south-eastern countries are no doubt its chief home, and it is abundant in many parts of the Austrian dominions, as well as in Roumania and the Balkan peninsula, occurring also, though mostly as a migrant, in Greece, Asia Minor and Palestine. On its return passage it is in great request on most of the Mediterranean Islands, being then very fat and much esteemed for the table.*

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* Its occurrences in Denmark are carefully and critically recounted by Prof. Reinhardt (Vid. Meddels. 1874, pp. 113-120).

The bill is brownish-black, inclining to orange at the base of the lower mandible: the irides reddish-brown: the bare space behind the eye brownish: head, neck, and most of the wing-coverts, glossy greenish-blue,† tinged in places with reddish-brown; back, scapulars, and tertials, light cinnamon; small anterior wing-coverts and rump china-blue; upper tail-coverts berlin-blue; the two middle tail-feathers brownish-green glossed with coppery-purple; the rest, for about two-thirds of their length, bluish-green, the remaining third much paler, and the outer pair tipped with greenish-black, the shafts black; the primaries and secondaries verditer-blue at the base, the rest dark bluish-black on the outer web, the inner web being blackish-brown; chin greyish-white; throat verditer with shining streaks of a lighter hue; breast, belly, inner wing-coverts and lower tail-coverts, pale bluish-green; remiges beneath rich berlin-blue, except at the base where they are verditer-blue and near the tip where they are dusky; tail-feathers, except the middle pair, berlin-blue beneath for about two-thirds of their length, and then pale verditer-green, the slightly elongated outer pair being tipped with dark blue: legs and toes brownish-yellow; claws black.

The whole length is nearly thirteen inches, from the carpal joint to the tip of the wing, eight inches: the tail, which excepting the outer feathers is slightly rounded, about four inches and a half.

The sexes do not differ externally, and the adults are said not to moult before their departure for the south.

Young birds in their first autumn have the bill black at the tip and yellow at the base: the irides brownish-grey: the head, neck, breast and belly are dull greyish-brown, with the tips of the feathers lighter, and a slight gloss of bluish-green; the cinnamon on the back and scapulars of the adults is replaced by dull orange, slightly tinged with green; the remiges shew but a small portion of the deep blue, and this is of a dusky shade; while the tail is dull greenish-grey, slightly glossed above with blue; but obscured as is the plumage, it is impossible to be mistaken. The time that elapses before the full colours are assumed is unknown.

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* It is singular when its range and brilliant plumage are considered that this bird cannot be identified with any species mentioned by Aristotle.

† We must remember that in this, as in most birds of glossy plumage, green often changes to blue, and blue to green, according to the light in which the specimen is held.

The nestling has a still more dingy appearance; the head, neck, lower parts of the back, and the whole body beneath, are streaked with light greenish-grey; upper part of the back and scapulars greyish-brown, tinged with dull green; wings and tail as before described: the irides are grey, and the feet pale brownish-yellow.

The vignette represents the sternum of this species.*

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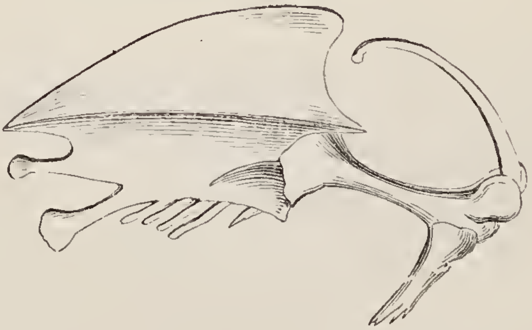
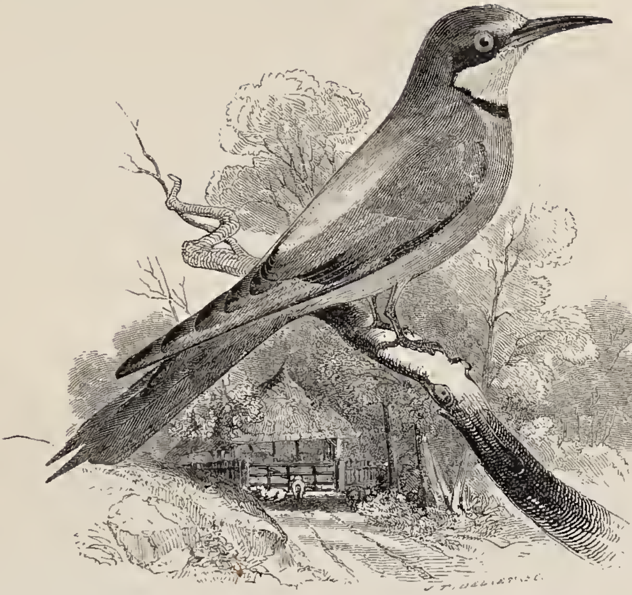
* Dr. Bree in 1859 (B. Europe, i. p. 157) mentioned a male of the Abyssinian Roller, then in the possession of Mr. Small of Edinburgh, "killed near Glasgow a year or two ago," adding that a "female was also obtained a short time after, but forty miles distant." The normal range of this species—*Coracias leucocephalus*, P. L. S. Müller; *C. abessinus*, Bodd. and *C. senegalensis*, Gmel.—has been traced by Mr. Sharpe (Ibis, 1871, p. 199), and it is a very unlikely bird to have escaped from confinement, since Rollers are not often imported alive to this country. There is no other record of the appearance of the species in Europe.




J. T. WILLIAMS SC.

Merops apiaster, Linnæus*.

THE BEE-EATER.

Merops apiaster.

Merops, *Linnæus*†.—Beak rather long, hard, slightly decurved, and tapering to a point, the culmen elevated. Nostrils basal, lateral, oval, covered by hairs directed forwards. Wings long, of ten primaries; the first very short, the second the longest, but the third nearly its equal. Tail of twelve rectrices, rather long. Tibiæ bare below; tarsi short, toes small, three before, one behind, the middle united to the outer toe as far as the second joint, and to the inner as far as the first joint.

No specimen of the Bee-eater is recorded to have been killed in England‡ till that exhibited to the Linnean Society by Sir J. E. Smith, which was shot at Mattishall in Norfolk, in June 1793, as Latham (Syn. Suppl. ii. p. 149) says, out of a flight of about twenty, some survivors of which

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[*] Syst. Nat. Ed. 12, i. p. 182 (1766). [†] *Loc. cit.*

[‡] Charleton in 1688 wrote (Onomast. p. 87) of the species "reperitur . . . in *Anglia* autem rarissime aut nunquam." The specimen he figured was brought from Italy.

probably were observed at the same spot in the following October (Trans. Linn. Soc. iii. p. 333). The specimen was figured by Lewin (Br. B. pl. 43), whose plate is dated "Nov. 7, 1793," and, having been given by Smith to Lord Derby, is now with the rest of his collection at Liverpool, as its curator Mr. T. J. Moore believes. Since that year the species has been obtained more than thirty times in Great Britain and four times in Ireland; but as particulars of its several occurrences, including that just mentioned, have often been erroneously given*, it seems expedient to recite them in detail. Taking the maritime counties and beginning in the west, Drew states (Hist. Cornwall, i. p. 585) that four were seen, and two shot, at Madern near the Land's End in 1807; while, according to Couch, and Bellamy (Nat. Hist. South Devon, p. 202), a flock of twelve, of which eleven were shot, was observed near Helston in the same county in May, 1828. In Devon Dr. Moore in 1837 wrote (Mag. Nat. Hist. ser. 2, i. p. 180) that one was shot at Leigham in April 1818, another at Ivybridge in 1822, and that a third was in Mr. Rowe's collection; while Mr. Nicholls records (Zool. p. 6143) a male killed at Kingsbridge in May, 1858. One was shot at Chideock, in Dorset, and preserved in the Bridport Museum, as stated in the first Edition of this work.† In the Isle of Wight one is said (Zool. p. 4870; Nat. 1855, p. 264) to have been obtained near Freshwater in June 1855. In Sussex Mr. Knox mentions one shot at Chichester, May 6th, 1829; and Mr. Ellman in 1850 recorded (Zool. p. 2953) one killed at Icklesham, now in Mr. Borrer's collection. As regards Kent, the bird here figured was shot at Kingsgate in May 1827, and another, killed at Lydd, was in 1844 in Dr. Plomley's collection (Zool. p. 623). In Essex one was killed about midsummer, 1854, at Feeting

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* This will be found on examination to be especially the case with Mr. Morris's long list, a large proportion of the notices applied by him to the Bee-eater having really reference to the Hoopoe, as is plain on comparing the details furnished of that bird in former Editions of the present work and by Mr. Knox, whence they appear to have been copied, and the extracts misplaced.

† The example then said, on Heysham's authority, to have been shot at Christchurch in 1839, was, as Mr. Borrer informs the Editor, a foreign specimen.

(Zool. p. 4478). Two examples according to Sheppard and Whitear were obtained in Suffolk—one at Beccles in the spring of 1825, and the other at Blyburgh in the month of May; while one is supposed to have been seen at Glemham in June 1868 (Zool. p. 1696). In Norfolk, besides the flight in the last century already noticed, Sheppard and Whitear mention one obtained near Yarmouth; Lubbock, in 1845, recorded one from the same neighbourhood more lately; and Mr. Stevenson, in 1866, one killed at Gisleham many years before, in addition to a pair (which there is some reason to suppose had a nest) shot on the river between Norwich and Yarmouth June 3d, 1854 (Zool. p. 4367). In Lincolnshire Mr. Cordeaux notices a specimen without locality or date some years before 1872; and (Zool. 1880, p. 511) a second, shot at Tetney Haven, August 16th, 1880. Further northwards in England there is no satisfactory evidence of this bird's appearance;* but Mr. R. Gray says he has seen an example obtained in Forfarshire; and one killed, in June 1852, at Kinmundy, near Peterhead, is recorded (Nat. 1852, p. 204); while Mr. Edward mentions (Zool. p. 6672) a supposed specimen killed about the same time between Huntley and Dufftown. Mr. R. Gray also states (B. W. Scotl. p. 513) that a bird believed to be of this species was seen at the close of August 1869 on the river Black Cart in Renfrewshire, and Thompson recorded (Mag. Nat. Hist. ser. 2, ii. p. 18) an example, killed October 6th, 1832, near the Mull of Galloway. Mr. Dix, in 1869, mentioned (Zool. s.s. p. 1675) one obtained in Pembrokeshire. Four are said (Zool. s.s. pp. 271 and 561) to have appeared at Stapleton, near Bristol, in April or May 1866, on the 1st or 2d of which latter month three of them were shot; and, forming part, probably, of the same visitation, was a male killed, at Bishopstowe in Wilts, May 4th, 1866; as also, according to Mr. Sharpe's information to Capt. Kennedy (B. Berks. &c. pp. 180, 181), one seen for some days in the same year at Dropmore. One shot at Godalming, some years before 1837, rests on the authority of Kidd (Entomol. Mag. iv. p. 270), and Hewitson states (Zool. s.s. p. 2027) that there was an example at Oatlands, feeding on yew-berries in the late autumn of 1869. In May 1879 a pair was shot near Derby (Zool. 1879, p. 461), one of which is in Mr. Whitaker's collection. As regards Ireland, Vigors many years ago reported (Zool. Journ. i. p. 589) one obtained, in the winter of 1820, on the sea-coast near Wexford, in which county Mr. Watters says that another was procured in the summer of 1848; while Dr. J. D. Marshall, in 1829, recorded (Mag. Nat. Hist. ii. p. 395) one killed in Wicklow a few years before; and according to Thompson, Dr. Graves, writing in 1830 mentioned one more obtained in that island, but without giving date or locality.

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* Mr. Morris records a reputed Yorkshire example from a newspaper-paragraph, in which it was called a "beef-eater" and said to have been killed near Sheffield.

This bird, like the Roller, winters in the interior and southern parts of Africa; and as will be seen from the statements above cited, its visits to our islands in many respects resemble those of that species. Yet some differences are observable;—the Bee-eater has not occurred by any means so often, especially in the northern parts of the United Kingdom: it has several times arrived in flights; and, on one occasion, there are grounds for thinking that it tried to breed in England. The first of these differences may be connected with the fact of its normal summer-range in Europe not being extended so much towards the north and especially the north-west, as is that of the Roller; the second with its social habits, for it commonly migrates and breeds almost always in companies; and the third with its somewhat less conspicuous appearance, added to its greater fleetness on the wing, which last circumstance may possibly explain the fact of a pair having reached the very heart of England ere they met their death. It will be observed that most of the dated captures of this species have occurred between the end of April and beginning of May, so that a majority of the examples which have visited us have doubtless been seeking a breeding-quarter.

The Bee-eater does not appear to visit the Low Countries;

but it has occurred in Heligoland, and is a rare straggler to Denmark, where some five or six examples have been obtained. It has not yet been recognized in Norway; and in Sweden but a few times—a pair (of which the male was killed) having been observed near Ystad in June 1816, a single bird in Dalecarlia in August 1829, and six in May, 1858, near Wexio, where they stayed for three days. Yet it has penetrated within the Arctic Circle, for, according to Herr Meves (Œfv. K. Vet. Ak. Förh. 1868, p. 264), one was obtained a little below Muonioniska, June 3d, 1865. Though it visits North Germany pretty often it is reported to have bred but few times in that country*; and it is rare, if it ever occurs, in northern Russia, but it reaches the neighbourhood of Moscow, and may be traced thence to that of Orenburg. Further eastward it does not seem to go beyond the Irtisk in so high a latitude, though lower down it breeds commonly in Turkestan, and extends to Cashmere, the Punjab and Scinde, and it has been observed abundantly at Peshawur; but India is occupied by other species of the genus. Returning westwards it appears in Beloochistan, Persia and Arabia. The majority of the birds bred in Eastern Europe, and perhaps those of Asiatic origin, pass through North-eastern Africa twice a year, though some may breed in Central Egypt. Drs. Hartlaub and Finsch do not include it among the birds of East Africa; but it reappears in Natal and annually visits the Cape Colony, where it is also said to breed.† It may be almost uninterruptedly traced, and it occurs in the Canaries and Madeira, while in Mauritania it is one of the commonest of summer-birds. It is well known, and at times abundant, in all the Mediterranean islands and countries bordering on that sea. The crossing of the Strait of Gibraltar by the Bee-eater has been repeatedly observed by Col. Irby, and in some parts of Portugal and Spain* it is very common. In France its appearance is rarer, for it generally occurs throughout that country as casually as with us, though it breeds yearly in Provence, and, according to Degland, on Baillon's authority, it did so, in July 1840, at Pont-Rémy near Abbeville.†

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* Gloger says that a pair bred in 1792 near Ohlau in Silesia: Von Heuglin mentions (Naumannia, 1851, iii. p. 65) a nest in June 1834 in Württemberg, and Jäckel (*op. cit.* 1856, p. 251) one some years before near Würzburg in Bavaria. Palliardi states that Von Woborzil in 1842 found the species breeding near Prague.

† Kolben describes a bird called at the Cape of Good Hope by a name which his English translator renders "Gnat-snapper." Latham and, after him, Montagu with other writers take this for a Bee-eater, but it is evidently an *Indicator*.

The nest is invariably at the end of a hole bored in the ground, a bank or sand-hill being generally chosen, and many pairs of birds resorting to the same place for the purpose of breeding. The hole is usually pierced horizontally for some three or four feet, and then enlarged into a spherical chamber about a foot in diameter. This, however, is in some cases unused, and another passage about a foot long leads to a second chamber. Col. Irby says he has known the holes to reach a distance of eight or nine feet, and, where there was no suitable bank, to be sunk vertically from the surface, adding that the bird's bill is sometimes worn away by its mining operations to less than half the usual length. Mr. Salvin observes (Ibis, 1859, p. 303) that the marks left by the birds' feet in passing in and out, together with the absence of fresh earth below the hole, generally give a sure sign of the nest being finished and of its containing eggs. These, to the number of six or eight, are mostly globular, and of a glossy, translucent white, measuring from 1·09 to ·95 by from ·92 to ·7 in. They are laid on the bare soil‡, though, as incubation proceeds, the floor of the chamber becomes strewn with the legs and wing-cases of the insects which form the birds' food and are their castings, allowed to accumulate in such quantities that a handful may be taken up at once. Lord Lilford says (Ibis, 1860, p. 236) that he has seen three or four old birds fly from the same hole, a fact not easy of explanation, and also that so soon as the young can take wing both they and their parents quit their breeding-stations. It remains to be said that in some favourite places from fifty to seventy pairs of Bee-eaters may be found breeding within the space of a few yards.

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* Montagu in 1813 added somewhat to the scant knowledge of this bird then possessed, by the information, derived from an officer engaged before Badajos in 1811, that it was not uncommon there.

† See also Le Correur (Rev. Zool. 1840, p. 355) who evidently refers to the same event, though the locality named is Liencourt, about half a league off.

‡ Some of the older writers declare that the bird lines its nest with moss, but nearly all modern observers agree in the statement above given.

Examples of this bird killed in this country are generally found to have been feeding upon humble-bees; but the honey-bee, wasps of several species, grasshoppers, locusts and many kinds of beetles are also captured by it—often as they fly, but also by the bird watching from an elevated perch until the insects alight, when they are rapidly snatched away. The prey is almost always seized across the body, and a few sharp pinches of the bill deprive it of life, or at least of the power of retaliating by its sting, if it possess one. More than three centuries ago Belon* related of his own observation that in Crete the boys used to transfix a *Cicada* with a bent pin, to the head of which a thread was tied, and then, holding its other end in their hand and letting the insect fly, the Bee-eater would dart upon it, and swallowing the bait be caught by the hook. The swift and lofty flight of this bird, which, though its movements are slower, some writers compare to that of a Swallow, has been often noticed, among others by Sir C. Fellows (Ann. Nat. Hist. iv. p. 213), who remarks on the "rich warbling 'chirp'" (which Col. Irby syllables *teerrp*) it utters on the wing; but some observers call this note harsh.

In the adult male the bill is nearly black: the irides red: the lores and ear-coverts black; forehead white, passing into verditer-blue, which extends in a line under the eye; top of the head, neck, mantle and base of the wing-coverts, rich chestnut, passing on the lower part of the back into saffron-yellow; anterior wing-coverts dull bluish-green; primaries greenish-blue, the shaft, tip and border of the inner web, black; secondaries chestnut, passing into bluish-green and broadly tipped with black; tertials greenish-blue; upper tail-coverts bluish-green; tail-quills duck-green, the middle pair elongated about an inch beyond the others, and narrowing after they are passed; chin and throat rich saffron-yellow, bounded below by a bar of bluish-black; breast, belly and lower tail-coverts, verdigris-green, tipped with blue; lower wing-coverts fawn-colour; inner surface of primaries and rectrices greyish-brown, that of the secondaries buff, broadly tipped with greyish-black: legs, toes and claws reddish-brown.

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* 'Hist. de la Nat. des Oyseaux,' p. 225, and 'Observationes' (ed. Clusius), lib. i. Ray gives an English version of the passage in his translation of Willughby's 'Ornithology' (p. 148): the rendering quoted in former editions of the present work is from Shaw (Nat. Misc. no. 162) and is less accurate. Belon also says that this bird feeds on the seeds of various plants and on corn, a statement apparently not confirmed by recent observers.

The whole length to the tip of the middle rectrices is eleven inches; from the carpal joint to the tip of the wing, five inches and three-quarters.

Females are not so brightly coloured as males, the yellow on the throat is paler, and the green tinged with red.

The bird here figured, supposed to have been in its second year, had the chestnut much paler and not extending below the neck, while the lower part of the back was greenish-yellow.

A young bird of the year, in the Author's collection, had the top of the head green, with a small patch of reddish-brown above each eye, no chestnut on the back, nor dark band bounding the throat; the rectrices even at the tip.

The vignette represents the sternum of this species.*

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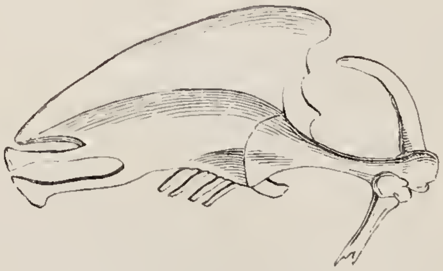
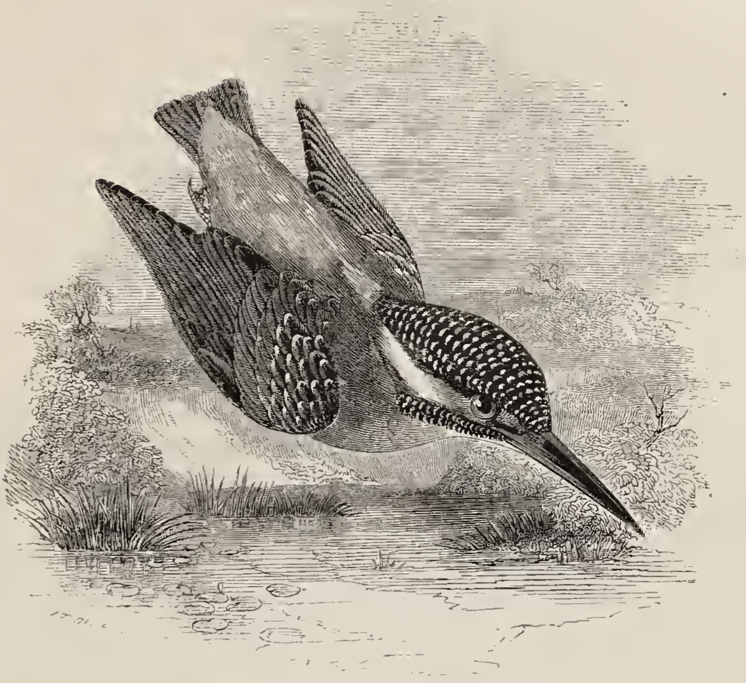
* Mr. Hancock (B. Northumb. &c. p. 28) has recorded the occurrence in this country of the "Blue-tailed Bee-eater," *Merops philippensis*, P. L. S. Müller, *M. philippinus*, Boddaert, an example of which "was shot near the Snook, Seaton Carew, in August, 1862." No other instance of the appearance in Europe of this eastern species is known.





ALCEDO ISPIDA, Linnæus[*].

THE KINGFISHER.

Alcedo ispida.

ALCEDO, *Linnæus*[†].—Bill long, hard, straight, quadrangular, and acute. Nostrils basal, oblique, and nearly closed by a bare membrane. Wings short and rounded, of ten primaries, the second or third the longest, but the first nearly equal to them and longer than the fourth. Tail very short, of twelve rectrices. Tibiæ bare below; tarsi short; toes three before, one behind, the middle united to the outer toe as far as the second joint, and to the inner as far as the first joint; hind toe not much shorter than the inner.

THE KINGFISHER is one of the most beautiful of our birds, bearing comparison with many brought from climates deemed more favourable to the production of brilliant colours, and is in consequence so much sought after by the idle and thoughtless that its numbers, probably never very great in any part of the country, have of late years very sensibly decreased. A frivolous fashion has at times helped to make it scarcer, but perhaps not to the extent that some writers have urged; for, through the instability of fancy, the questionable taste which has more than once seized ladies of adorning their dress with its plumage has generally been short-lived. The makers of artificial flies keep up a steady demand for Kingfisher's feathers, and thus furnish an additional motive for its destruction; but the most constant persecution the species undergoes arises rather from the delight—the survival, possibly, of an ancient superstition to be presently noticed—so many people take in possessing its stuffed skin, which, placed in a glazed box, is regarded as a desirable ornament of a room; and to this end more Kingfishers are probably shot or netted for English bird-stuffers than any other species.

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[*] Syst. Nat. Ed. 12, i. p. 178 (1766).

[†] *Tom. cit.* p. 179.

Well known throughout the three kingdoms, the Kingfisher cannot be said to be anywhere numerous. It frequents the banks of streams of all sizes, from our largest rivers to the shallowest brooks, if they be not too rapid, as well as lakes, ponds and, at some times of the year, the sea-shore. Its food consists of small crustaceans, aquatic insects, such as dragon-flies or water-beetles, and little fishes—especially minnows and sticklebacks, while leeches are also said to enter into its diet. It is most often seen glancing over the surface of the water, or perched on an overhanging bough or stump, stone or railing by the margin, whence it watches for its prey, and occasionally it may be observed for a few seconds poised on the wing, like an Osprey or a Kestrel, preparatory to the plunge which is to secure its booty. Its captures are always made by dropping almost perpendicularly into the water: its submergence however is but momentary, and hardly is it lost to sight beneath the surface, than it rises again in a slanting direction and makes for one of its usual stations on the bank—the prey, if a fish, being held crosswise in its bill, and often, from its gleaming scales, plainly visible. Reaching its perch a few vigorous blows against the stock or stone deprive the victim of motion, and with a skilful toss in the air, or twist between the mandibles, it is again caught head-foremost and swallowed. Insects require less force to render them helpless, and are usually disposed of more readily.

The Kingfisher is solitary in its habits, and except in the breeding-season two are seldom seen at once without one being in angry chace of the other. It pairs in midwinter or very early in the spring, and the same spot is not uncommonly occupied year after year for the nest, which is almost invariably placed in a hole in a bank, dug out by the birds;* and, though the site chosen is generally within the limits of their customary beat, many instances of their going far from their usual haunt are known. Occasionally a convenient lodging is found in the crumbling soil under the roots of a tree, especially when some drooping boughs afford a screen, and, though rarely, a hole in masonry adapted (Zool. s.s. p. 5080). The height above the water seems to be immaterial; indeed the vicinity of water is not at all needed, for, since Jesse's account (Gleanings, iii. p. 92) of a nest in the bank of a dry gravel-pit, used as a rubbish-hole, in Hampton Court Gardens, in 1834, several observations to the same effect are on record. That nest was close to a much frequented footpath, and other instances are known in which the birds have shown no fear of the presence of man. Mr. A. C. Smith pointed out to the Editor a hole by the side of a pond in the yard of a large dairy-farm surrounded by buildings, and the almost hourly resort of numerous cattle and their attendants, which had for years contained a Kingfisher's nest. On the other hand a retired spot is much more frequently chosen, and occasionally one which would be thought most unlikely, for the Editor has seen a nest in the side of a chalk-pit, in an open field, nearly a mile from any water.

Kingfishers, like many other birds, throw up the indigestible portion of their food, and in the economy of this species the castings play an important part, for there cannot now be a question that of them is formed the nest, as distinguished from the hole in which it is placed. The entrance of this is just large enough to admit the bird easily, and thence a tunnel from eight or ten inches to three feet long runs, generally with an upward slope, to a chamber about six inches in diameter. In this the eggs are laid, sometimes on the bare soil, but at others on the fishbones already ejected by the birds and allowed to accumulate until they amount to a handful or more.* These bones are cast up as pellets, but are apparently worked by the bird's movements, as she sits, into the shape of a cup; and, whether by her pressure, by the moisture of the soil or by both, they generally cohere so as to become a very pretty nest, more than an inch deep and quite smooth within, which with care may be removed so as to preserve its structure, though a very little shaking will quickly reduce it to a mere heap of its component materials. A large number of fishbones are, however, not unfrequently found in the passage leading to the nest during incubation, but especially after the young are hatched, the accumulation often becoming very great. These are mixed with decaying fishes, brought as food for the brood, but for some reason or other left in the tunnel, as well as with their fluid excretions, forming a dripping fetid mass, almost walling them in, and swarming with maggots. The eggs, from six to eight in number, have a pure white translucent shining shell, are often almost globular in shape, and measure from ·95 to ·84 by from ·78 to ·69 in.

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* It has been often stated, and perhaps is most commonly believed, that they take possession of the burrow of a water-rat, but proof of the fact seems wanting, while not only have they been frequently observed boring their own hole; but, where the soil is hard, Dr. Kutter (Journ. f. Orn. 1867, pp. 44, 45) has noticed that their upper mandible, which seems to be the tool chiefly used in excavation, becomes worn down by the labour.

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* It must be remarked that very divergent opinions have been held on this point by ornithologists, some of whom are apt to think that birds' habits never vary, and that what has on one occasion been observed must always be the rule. At the same time the statement of several comparatively modern writers at home (Mag. Nat. Hist. iii. p. 175, and iv. p. 450) and abroad, that the nest is formed of wool, feathers, twigs and moss, is so wholly contradicted by the majority of observers, that it must have been made in error, as remarked by Leisler (Ann. Wetterau. Gesellsch. i. p. 292). More than two centuries ago Sir T. Browne (Misc. Tracts, p. 107) shewed himself well acquainted with the real materials of a Kingfisher's nest, for which, as Rennie (Archit. B. p. 51) shews, some classical authors seem to have taken the shell of a sea-urchin.

The young on leaving the nest flit to some neighbouring perch, whence they keep up a clamorous twittering, and, until able to fish for themselves, are for some days fed by their parents with much assiduity. It would seem that more than one brood is often reared in the season, but precise information on this point is wanting. Certain it is that Hewitson's observations (Zool. s.s. pp. 707, 1684 and 3023), continued over several years, prove that the eggs must sometimes be laid very early in February, since he knew the young on one occasion to be out of the nest on March 11th, while on the other hand they have been found (Zool. s.s. p. 2022) in the nest so late as July 24th. The most usual breeding time, however, seems to be about the beginning or middle of May.

Young Kingfishers, taken from the nest, are not hard to rear. At first they require a fish-diet, but will afterwards do well for a time on flesh-meat. If kept in a cage of sufficient size to admit a large trough of clear water, in which they can be supplied with live minnows or the like, they make an interesting display of their habits, and will retain their health ; but they are voracious feeders, and the quantity of fishes they will consume is extraordinary. This renders it difficult without constant care to keep their cage from becoming offensive, even though it be an outdoor aviary. They are also extremely pugnacious, and, unless separated in autumn, combats ensue in which the strongest will kill the weaker, even to the last bird.* Thus the keeping of Kingfishers in confinement is always attended with trouble, and frequently with disappointment.

The Kingfisher flies rapidly with a very quick action of its short wings, generally near the water and following the windings of the stream along which it is passing, though it will at times suddenly shoot aside and aloft to cross from one reach to another, or on the appearance of danger, occasionally uttering a shrill piping cry which may be syllabled *te-et*, and is not unlike that of the Common Sandpiper.

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* This happened two seasons following to the Author's friend, Mr. W. Rayner of Uxbridge, whose aviary was, however, seldom without examples.

The young seem to be driven away by their parents towards the end of summer, but at any rate at that season and later in the year, they are observed far from where they have been bred, and would appear to make their way gradually to the coast, whence most of them probably leave the country.* The old birds on the contrary are resident throughout the year, unless forced to quit their haunts by the freezing of the inland waters, which cuts off their supply of food. Under the stress of hunger they will sometimes resort to human dwellings, and share with other birds such hospitality as may be there afforded; but very many starve, as is proved by the numbers found dead in and after a prolonged frost. The more fortunate, if there be no open water left within their ordinary range, are those that succeed in reaching tidal rivers or the coast, where they frequent the shallows and rock-pools, which usually abound in small crustaceans and often contain little fishes. In such places, at low water and in calm weather, the Kingfisher fares well throughout a severe winter; but wretched is its fate should it fail to find such a refuge, and even continuous winds, by ruffling the surface of the sea, may make the capture of prey difficult if not impossible.

An account of this bird would be incomplete without reference to the very ancient fables told of it, especially since some of them find a place in the works of several of our most esteemed poets, and possibly credence yet among the uneducated; but want of space forbids the subject being here fully treated, and it must suffice to do little more than briefly quote certain passages cited by Pennant, and by Mr. Fennell (Gentleman's Magazine, Feb. 1836, pp. 127–129); premising a knowledge of the classical story of Alcyone or Halcyone and Ceyx, who were changed into Kingfishers—birds that bred, it was said, at the period of the winter solstice, during which time the weather remained so calm that the mariner might put to sea without fear of tempest—

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* Their migration seems to have been first noticed by a correspondent of Loudon's (Mag. Nat. Hist. i. p. 23) whom the present Editor, in spite of the misleading signature, suspects to have been Mr. Yarrell himself.

and such a season has therefore given rise to the proverbial expression "Halcyon Days." One version of the fable attributed this supposed fact to the influence of Æolus, the wind-god and father of Halcyone, and, in his translation of Ovid's Metamorphoses, Dryden has the lines—

> ———————"Her sire at length is kind,
> Calms every storm, and hushes every wind."—Book xi.

W. Browne, who died in 1590, wrote in 'Britannia's Pastorals,'—

> "Blow, but gently blow, faire winde;
> From the forsaken shore,
> And be as to the Halcyon kinde,
> Till we haue ferry'd o're."—Book ii. song 5, ll. 253–256.

But the other version supposes that Kingfishers had power to quell the storm, as seen by the line of Theocritus, rendered by Fawkes

> "May halcyons smooth the waves, and calm the seas."—Idyl. vii. l. 73.

Shakespear refers to the belief, putting into the mouth of La Pucelle (K. Henry VI. pt. I. act i. sc. 2) the words

> "Expect Saint Martin's summer, halcyon days."

This was, however, not the only quality attributed to the Kingfisher. Albertus Magnus speaks of its dried body moulting its feathers, and it was supposed to be, when kept in a wardrobe, a preservative of the woollen stuffs therein laid. It likewise averted thunder-bolts and possessed other virtues, while there was a general belief that the dead bird hung by a thread would always turn its bill to the point of the compass whence the wind blew. Storer, who died in 1604, says—

> "Or as halcyon, with her turning brest
> Demonstrates wind from wind, and east from west."
> *Wolseius Triumphans.*

Marlowe, about the same time, has the lines—

> "But how now stands the wind?
> Into what corner peers my halcyon's bill?"—*Jew of Malta,* act i. sc. 1.

And, after him, Shakespear makes Kent (Lear, act ii. sc. 2) speak of rogues who

> ———————"turn their halcyon beaks
> With every gale and vary of their masters."

Sir T. Browne tells us (Pseudodoxia Epidem. bk. iii. chap. x.) that he tried the experiment, but in spite of his failure, the belief survived, and may indeed yet exist. Mrs. Charlotte Smith in her 'Natural History of Birds', posthumously published in 1807, speaks (i. p. 88) of having once or twice seen a Kingfisher suspended to a cottage ceiling and of being "assured that it served the purpose of a weather vane," though sheltered from the direct influence of the wind.*

The Kingfisher is generally distributed over most parts of Great Britain, breeding yearly in every English county, and occurring, says Mr. Gray, on almost all streams throughout the west of Scotland south of Sutherland.† It has been found in Islay and Skye, though not in the Outer Hebrides; but it is to be met with at least occasionally in all suitable localities in Ireland, chiefly as an autumn or winter visitant, though it has bred near Belfast. In Scandinavia it is hardly more than a straggler, appearing from August to March, not uncommonly in Denmark, but very rarely in Norway and Sweden, and only in the south of those countries, while only one instance of its breeding is recorded, namely near Jönköping in 1872. It is pretty common in Mecklenburg but scarcer in Pomerania, and is extremely rare in Curland and the Baltic provinces of Russia. Further eastward its northern limits seem not to be defined, but it occurs in the southern part of Perm. Pallas states that it is common on the Irtish and that he had received it from the Jenesei; but, though Dr. Finsch (Verhandl. zool.-bot. Gesellsch. Wien, 1879, p. 153) saw a specimen from Omsk, it may be doubted whether some of the birds found in these districts do not belong to the nearly-allied *Alcedo bengalensis*, which alone seems to occur in Turkestan; while on the other hand Mr. Hume records what cannot be specifically distinguished from our *A. ispida* as abundant in Sindh, and the latter occurs also in Beloochistan, Persia and Arabia. Egypt affords a winter-residence for its young, as also Mauritania, but it is said to breed in Morocco, and it visits the Canaries and Madeira. Returning to the continent it is pretty generally distributed in every part of Europe* and Asia within the boundaries just traced, but is hardly anywhere plentiful, though in hard frosts it often collects in some numbers around any open water; and, being conspicuous as it sits on the ice, a name signifying Ice-bird has been applied to it in all the Teutonic languages.†

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* The Editor has failed to find any exhaustive account of the many interesting fables concerning the Kingfisher. Aldrovandus gives a great number, but Holland's translation of Pliny should not be overlooked, nor Rennie's 'Architecture of Birds,' and M. Rolland's 'Faune Populaire de la France.'

† In some parts of Scotland the Dipper is known as the Kingfisher.

The bill is black, with the base of the lower mandible orange: the irides hazel: lores black, space between the nostrils and eyes, and the ear-coverts, chestnut; top of the head and the nape very dark green, each feather with a subterminal bar of glossy verditer-blue; scapulars, tertials and upper wing-coverts dark green, the last tipped with glossy verditer-blue; remaining flight-feathers dull greenish-black, the exposed portion of the outer web, except near the tip of the primaries, being deep greenish-blue; middle of the back, rump and upper tail-coverts bright glossy verditer-blue; rectrices indigo-blue; chin, throat and an oblique patch on each side of the neck, white, tinged with buff; from the base of the mandible a dark green band, barred with verditer-blue as on the head, descends to the sides of the breast; the rest of the lower surface rich chestnut, somewhat paler towards the vent; quill-feathers beneath dusky: legs and toes reddish-brown, claws dusky.

The whole length is about seven inches and a half; the bill an inch and a half along the ridge, and two inches to the gape; the wing from the carpal joint to the tip, three inches.

The female is somewhat greener and rather less brightly coloured than the male, and her bill a little smaller: there is otherwise but little outward sexual difference.

Young birds have the bill shorter and wholly black, while their plumage though just of the same character as in the adults is everywhere duller, and also much darker.

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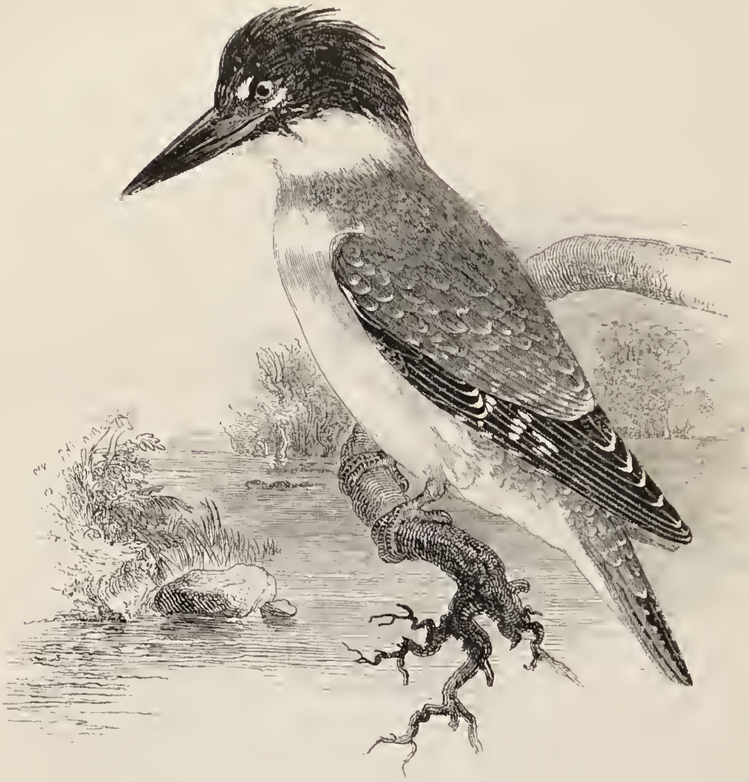
* It is said however to be very rare in Oldenburg.

† The Anglo-Saxon name was *Isern* or *Isen*.

PICARIÆ. *ALCEDINIDÆ.*



Ceryle alcyon (Linnæus*).

THE BELTED KINGFISHER.

Alcedo alcyon.

Ceryle, *F. Boie*†.—Bill long, hard, straight and acute, with a longitudinal groove on each side of the culmen. Nostrils basal, oblique and nearly closed by a bare membrane. Head crested. Wings moderately pointed, of ten primaries; the second and third nearly equal and longest, the first shorter than the fourth. Tail moderate, of twelve rectrices. Tibiæ bare below; tarsi short; toes three before, one behind, the middle united to the outer toe as far as the second joint, and to the inner as far as the first joint; hind toe much shorter than the inner.

Two examples of this bird occurred, says Thompson (Ann. Nat. Hist. xvi. p. 430, xvii. p. 69, and B. Irel. i. p. 373) in

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[*] *Alcedo alcyon*, Linnæus, Syst. Nat. Ed. 12, i. p. 180 (1766).

[†] Isis, 1828, p. 316.

Ireland about the same time. The first was shot by Mr. F. A. Smith at Annsbrook in Meath, October 26th, 1845; and the second, which was seen some days before November 20th of the same year by the gamekeeper of Mr. Latouche, of Luggela in the county of Wicklow, was shortly afterwards shot, according to Mr. Watters, by Mr. J. C. Campion. This last came into the possession of the late Mr. T. W. Warren, and was by him left to the Museum of Science and Art in Dublin: the other, believed to have been a female, was bought for that of Trinity College in the same capital.*

This Kingfisher, a native of North America, is not known to have been elsewhere observed in Europe, and its claim to be accounted a British Bird is so slight as to justify here but a brief notice of it. That it should be able to cross the Atlantic is not surprising, when its wide range in its own country and its long migratory flights are considered. Its habits have been described at great length by American ornithologists, and though some details given by Wilson, Audubon and Nuttall have been recently disputed, yet the general truth of their statements seems to be untouched, while some of the discrepancies between their accounts and those of later observers are explained by the often overlooked fact that the habits of almost any bird vary more or less according to season or locality. With certain differences, to be presently noticed, the behaviour of this species is nearly identical with that of our own. In summer it is found throughout North America from the Atlantic to the Pacific, and northwards to the shores of the Arctic Ocean, hardly a river or creek, lake or pond being free from its presence. In winter it is forced to the southwards, as the waters it frequents are successively frozen, though even in New England, to say nothing of parts of the Dominion of Canada, a few seem to maintain their position, especially in open seasons. But towards autumn the majority unquestionably repair to tropical quarters, reaching the isthmus of Panama, most of the Antilles and Trinidad, where according to Léotaud it is resident, and the same is said of it in some other West Indian islands;* but in those which have been the home for any length of time of a competent ornithologist it is declared to be migratory. It is a winter visitant to Bermuda, arriving, says Wedderburn, in September and disappearing in April. In Newfoundland, where says Mr. Reeks (Zool. s.s. p. 1692) it is tolerably common, it is, owing to the rigour of the climate, only a summer visitor.

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* Mr. Morris, on the information of Mr. G. Grantham, states that a third afterwards occurred to a friend of his near Bantry Bay, and also, though with some doubt, that a fourth was said to have been obtained near Dublin. In each of these cases confirmation, by some recognized authority, would be desirable before accepting the information.

The points in which this bird chiefly differs from the Kingfisher of this country may be briefly stated as follows. It haunts more rapid and turbulent streams, besides shewing at times a more decided preference for a maritime life, so as to be seen actively fishing half-a-mile out at sea. When frequenting the shore, crustaceans seem to form a considerable part of its food, and these are not the small and low forms on which our own bird preys, but some of the highest, as crabs (Ibis, 1859, p. 67).† Its powerful build enables it to swallow many fishes, especially the smaller malacopterygians, without killing them first, though acanthopterygians, and tough, hard-scaled fishes of any group are beaten against the bird's perch till they are dead, and if large their more digestible parts are alone swallowed.‡ It does not generally plunge perpendicularly into the water after its prey, but with a circular or spiral sweep. Dr. Coues (Bull. Nuttall Orn. Club, 1878, p. 92) records an observation by a correspondent of a Belted Kingfisher which, when the water was too rough to admit of its fishing, greedily devoured the berries of the sour-gum (*Nyssa aquatica*), ejecting in pellets their seeds and skin. It has a loud, harsh cry, syllabled by Mr. Gosse *churr*, not at all unlike a noise that may be made by a watchman's rattle*, and usually uttered sitting, or when disturbed. Like our own Kingfisher this bird breeds very early in the season, and much in the same manner. A hole is burrowed in a bank, and the nest is at the end of a gallery—never apparently less than two feet in length and sometimes as much as fifteen—which often turns at a sharp angle, and is sometimes said to be tortuous. Occasionally it would seem to be furnished with twigs, grass and feathers, though most commonly without anything more than fishes' bones and scales.† The eggs are said to be six or seven in number, of a pure, shining, translucent white, by no means always so spherical as is asserted, and measure from 1·37 to 1·25 by from 1·04 to 1·02 in.

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* Thus Mr. Ober (Proc. U.S. Nat. Mus. 1878, pp. 62, 193 and 272) says of it in Dominica, St. Vincent's and Grenada; while Sundevall (Œfvers. K. Vet. Ak. Förhandl. 1869, p. 585) asserts that it is found throughout the year in St. Bartholomew's. Both these authorities seem to have relied chiefly on information furnished to them, which was probably erroneous.

† But on fitting opportunity a crab will retaliate, for Wedderburn saw one seize a Belted Kingfisher, he had shot, while struggling in the water, and drag it beneath the surface.

‡ Mr. C. C. Abbott (Nature, vii. p. 362, xi. p. 227) having had considerable experience of this bird's habits, when catching almost exclusively small cyprinoids—soft-finned fishes, denied the assertion often made of its beating its prey to death before eating it. Being induced, however, by the evidence of a credible witness to think there might be ground for the established belief, he continued his observations in other places where the bird was feeding upon larger fishes, which he found to be butchered by it in the manner already stated. Mr. Gosse (B. Jamaica, p. 82) records a singular instance of two birds seizing the same fish simultaneously and tugging at it till the grasp of one gave way.

The bill is bluish-black, with the lower mandible lighter at the base: irides hazel: head and cheeks dark bluish-grey with a white spot just before and another under the eye; sides of the neck below and behind the crest white; back and wing-coverts bluish-grey, most of the latter tipped with white; remiges black—the primaries with the basal half of the inner web, and some irregular spots on the outer, white; the secondaries and tertials with the outer web bluish-grey, speckled and tipped with white; upper tail-coverts bluish-grey, with whitish specks; middle rectrices bluish-grey, but black near the shaft and with irregular white mottling across them, the rest greyish-black with interrupted white bars and bordered externally with bluish-grey; lower parts generally, white, with a broad bluish-grey pectoral belt, and the sides of the body of the same: legs and toes orange-brown; claws black.

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* Hence, according to Dr. Gundlach (Anales de la Soc. Esp. de Hist. Nat. 1878, p. 219), one of its names in Porto Rico is *Matraca*—a wooden rattle.

† The nidification of this bird has been the subject of much discussion (Am. Nat. i. p. 496; ii. pp. 218, 379, 403, 490, 614; iii. pp. 48, 615) due to somewhat hasty generalization of its varying modes.

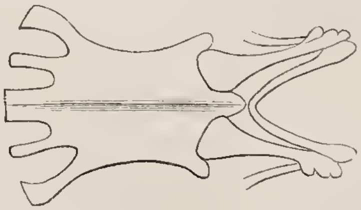
The whole length varies from nearly thirteen to nearly fifteen inches; the ridge of the bill measuring about two inches; and from the carpal joint to the tip of the wing six inches.

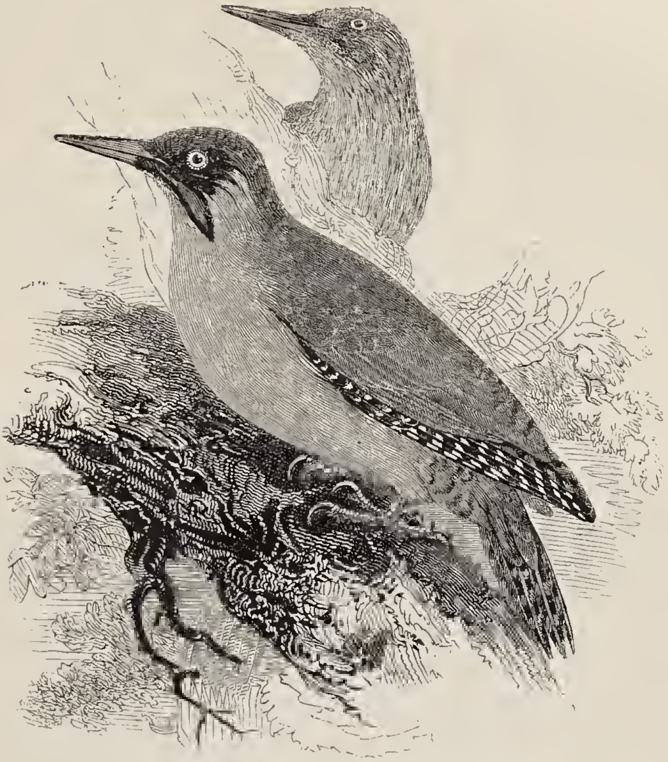
In the female the pectoral belt is mixed with reddish-brown; the sides of the body are deep chestnut which often unites to form a second broad belt of that colour about three-quarters of an inch below the first.

The present is not, as has been often asserted, the only species of Kingfisher found in North America, since *Ceryle cabanisi*, which some authors regard as being but the northern race of the widely-spread *C. americana*, occurs in Texas and perhaps in Florida. This beautiful Family of birds is the subject of a very fine 'Monograph' by Mr. Sharpe, admirably illustrated by Mr. Keulemans, which only needs Dr. Murie's promised chapter on their anatomy for its completion, when it will be rendered one of the most perfect works of the kind that has ever appeared.

Nitzsch observed that it seems to be a character of this Family of birds, shared with them, so far as is known, only by the Woodpeckers, that the nestlings are never clothed with down, but are perfectly naked until the permanent feathers make their appearance; from what, however, has been stated above (page 427), the Hoopoes appear to possess the same character.

The vignette represents the sternum of the common Kingfisher.





GECINUS VIRIDIS (Linnæus*).

THE GREEN WOODPECKER.

Picus viridis.

GECINUS, *F. Boie*†.—Beak about as long as the head, hard, broad at the base, compressed at the tip; upper mandible slightly arched, ending abruptly, with a shallow groove on each side running parallel to and near the culmen, and longer than the lower mandible, which is pointed, and has the gonys nearer the tip than the base and the tomia rounded. Nostrils basal, oval, covered with hair-like feathers directed forwards. Tongue capable of great protrusion, beset at the tip with horny barbs. Wings moderate; the first primary very short, the fourth longest, but the fifth nearly equal to it. Tail of twelve graduated rectrices, the outer pair very short and overlying the next, which with the rest are pointed and have stiff, decurved shafts, with hard webs. Tarsi strong, slightly feathered in front above; toes two before and two behind, the fourth, which is turned backwards equal to the third; claws strongly hooked, grooved and very sharp.

THE GREEN WOODPECKER is the commonest, and therefore the best known of the British species of its Family, but its distribution in England is, as will presently be more fully shewn, by no means general, while it occurs very rarely in Scotland or Ireland. It frequents wooded districts, and is commonly seen passing with an easy and undulating flight from one tree to another, nearly always alighting, after a deeper sweep than the preceding, on the lower side of a bough or near the bottom of the trunk, often but a foot from the ground, whence it climbs upwards in an oblique direction, partly supporting itself by the stiff pointed feathers of its tail, moving by starts, and if possible keeping the tree between the observer and itself. Arrived near the top, it will fly off, either returning to the lower part of the same tree by a short circuit, or settling upon another, but in either case to renew its movements in the same way.* Clinging to the more or less vertical bole, or larger limbs, it examines, as it goes, the crevices of the bark for the insects on which it feeds; on some trees occasionally knocking off, with a few taps of its powerful beak, a bit of bark to discover any that may be lodged beneath.

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* *Picus viridis,* Linnæus, Syst. Nat. Ed. 12, i. p. 175 (1766).

† Isis, 1831, p. 542.

Insects of many sorts, often in their larval stage, but especially the timber-haunting beetles, and spiders as well, form the chief food of this Woodpecker for the greater part of the year; but in summer it preys largely upon ants, and may then be often seen on the ground, where it maintains a curiously upright attitude as it sits, or moves over the grass, with a series of rapid but short hops, from one ant-hill to another. Here it industriously turns over the ground with its beak, spending often several minutes upon each nest and, returning to the spot at intervals throughout the day, bores conical pits (Zool. p. 2431) in the soil and secures the insects as they fall down the sides. Examples obtained at this time of year generally shew by the earth sticking to their beak how they have been engaged. The bird is also said to be an enemy to bees, and several authors concur in stating that it will crack hazel-nuts and eat acorns.

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* Selby says he had repeatedly seen it descend trees by moving backward. The Editor has not been so fortunate, though he thinks he must have enjoyed more frequent opportunities of observing the bird.

Generally solitary in its habits, spring is commonly well advanced before it is seen paired. Then some familiar haunt is usually chosen, and by careful watching, for it is a very shy bird, the particular tree intended for the nest may often be discovered. This is ordinarily an elm, ash, or poplar, but by no means unfrequently a horse-chestnut, sycamore or silver-fir, and rarely a beech or an oak—the harder woods being almost always avoided—while a trunk or branch that is rotten at the heart is commonly selected. Several incisions are often commenced and abandoned for no apparent cause; but when the work is begun in earnest, it is steadily prosecuted, and sometimes with great speed, the birds relieving each other by turns. The first incision is vertical, but it is soon widened until a circular hole is cut out, almost as truly as if traced by compasses or bored by a drill. This hole runs horizontally till the heart is reached, and then turning abruptly downwards is continued to the depth perhaps of a foot.* At the bottom it is somewhat enlarged, and there, without bedding of any sort, save a few chips that have not been thrown out, the eggs from four to seven in number are laid. These are of a pure, translucent, glossy white†, slightly pyriform in shape, and measure from 1·4 to 1·25 by from ·91 to ·85 in. But it not unfrequently happens that some other bird, particularly a Starling as before stated (page 232), will seize on the hole when completed, and though a struggle, lasting perhaps for some days, is the result, victory nearly always rests with the invader, who by carrying in a few sticks, straws or other furniture, renders the chamber at once unfit for its constructor. The Woodpecker thereupon gives up possession, and thus her hopes may be frustrated time after time, and she may be wholly hindered from raising a brood that season. When unobstructed, the same hole may be tenanted for several years in succession, and Couch records (Zool. p. 6327) an instance of the same tree being occupied for thirty consecutive years; but more commonly a new hole is made every season, the old holes seeming to serve as sleeping chambers for the birds at other times of the year, and it has been truly observed that Woodpeckers are among the earliest birds to retire to rest in the afternoon. The young are hatched towards the end of May, or beginning of June, and when fledged are said to creep about the tree containing the nest before they are able to fly. Taken at that time they may be brought up by hand, and become very tame, uttering a low note which has been compared to that of a very young Gosling. The adults have a considerable variety of cries—one, very harsh, loud, and apparently peculiar to the cock in early spring, has been syllabled by De Buffon *tiacacan, tiacacan;* another, which may be heard almost throughout the year, is a cheerful, laughing call, *pleu, pleu, pleu,* several times repeated, and is believed by most people to prognosticate rain, but some observations made with care fail to establish the credit of the species as a weather-prophet (Trans. Norf. and Norw. Nat. Soc. 1870-71, p. 31), and though "Rain-fowl" or "Rain-bird" used to be, if it is not now, one of the many names borne by this Woodpecker, doubts may perhaps be entertained as to its fitness.* Later

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* It has been said that the birds will carry to a distance the chips made in cutting the hole; but in the Editor's experience this is never done, and he has always found the easiest way of discovering a nest is by observing the foot of each tree in the presumed locality, that which contains it being invariably recognizable by the chips strewn on the ground.

† Eggs stained either by the sap of the tree, or perhaps by some fungoid growth, have been frequently found (Zool. pp. 2229, 2258, 2301, 2923, 6328), and are very beautiful objects, some being highly coloured. Hardy mentions a nest of green eggs (Annuaire Normand. vii. p. 288, note) brought to him with the mother, but one cannot help supposing that they may have been Starlings'.

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* Aldrovandus indeed said (Orn. lib. xii. cap. xxx.)—and the statement has been many times repeated by other writers—that the Woodpecker "veteribus pluuiæ auis dictus est." The Editor, after much search, has not discovered who these ancients were; but he believes he may confidently assert that such a name does not occur in any classical author; and if it were ever in use it may be open to doubt whether the bird intended was not rather a Plover. In his next sentence, however, Aldovandus seems to give the key to a reasonable explanation of the names "Rain-bird" and "*Pleupleu,*" applied respectively in England and France, for he says:—"Præsagire vero pluuiam credebatur ex vocis sono, cum nempe validius, quam soleret, stridere obseruabatur." The same view is taken by Salerne (p. 104), who says of this species "c'est peut-être sur son cri qu'on s'est avisé de dire qu'il promettoit de la pluie;" and De Buffon also inclines to the same belief.

Considering the very insecure ground on which rest speculations as to the in the summer a cry like one of those uttered by the Kestrel is often heard, proceeding presumably from the young, and occasionally diversified by a loud *chunk, chunk.*

The explanation or derivation of the common names of our birds is nearly always a matter of much interest, and those by which the present species is known invite attention, the more so since in former Editions of this work they were treated at some length.* "Rain-bird" has been already noticed, but it may be remarked that this name, as well as "Pick-a-tree," is stated by Wallis in his 'Natural History of Northumberland' (i. p. 321) to have been used in that county when he wrote (1769). "Wood-Speight" (often erroneously written "Woodspite") or simply "Speicht," as Hollyband had it in 1593 (Dict. Fr. and Engl. *sub voce* Pic), is cognate with the German *Specht*, and the French *Épeiche*, equivalent to Woodpecker, and it will be directly shewn that the prefix does not mean *wood* as has been suggested. "Yaffil" or "Yaffingale" refers to the bird's common cry, which has been well compared by Gilbert White and many others to the sound of laughter, and in the once-popular poem of the 'Peacock at Home' we have:—

> "The Skylark in ecstasy sang from a cloud,
> And Chanticleer crow'd, and the Yaffil laugh'd loud."

In some counties a Woodpecker is called a "Whetile," and in others a "Woodwale"—two words which seem to have the same derivation. The first has been supposed to be merely a corruption of whittle—a knife—formerly written *whytel;* but a still more ancient form of this word is *thwitel*

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capacity of birds for forecasting changes of the weather, it is thought inexpedient here to reprint the notes inserted by the Author of this work in his Second and Third Editions, taken from the writings of Mr. Scrope, Mr. A. Young and Sir H. Davy—particularly since none of them refer to birds.

* The derivations before given were supplied to Mr. Yarrell by "a learned friend at Cambridge" whom the Editor has not been able to identify. They were, according to modern investigations, extremely erroneous, though the less blame is to be on that account attached to them when it is remembered how very crude were the methods adopted by many etymologists of those days, before the study of philology was placed on any secure basis. It is to be hoped that the aid the Editor has received on the present occasion from his learned friends Prof. Skeat, Mr. Bradshaw and Mr. Aldis Wright may be more successful.

which renders the conjecture very unlikely. On the other hand "Woodwale" or "Woodwall" may be traced from "Witwall," as found in Hollyband's 'Dictionarie', before quoted (*sub voce* Lorion)—cognate with the Low-Dutch *Weedewael*, and the Old-German *Wittevaal*, as given by Kilian (Etymol. Teuton. Ling. 1772, p. 792)—of which "Whetile" is but an easy corruption; and it is certain that, whatever the second syllable may mean, the first is only *wood*—in old Anglo-Saxon *widu*—and has nothing to do with *woad* as has been thought. In some form or other the word occurs not unfrequently in old poems. Thus in the 'Romaunt of the Rose', so long erroneously attributed to Chaucer, we have—

> "In many places were nyghtyngales,
> Alpes*, fynches and wodewales."—*Ed.* 1878, iv. p. 34.

Again in 'Thomas of Erceldoune', one of the copies reads:

> "I herde the iay, and the throstell,
> The mavys menyd† in hir song,
> The wodewale farde‡ as a bell,
> That the wode aboute me rong."—*Ed. Murray, Fytte* i. ll. 29–32.

And in the ballad of 'Guy of Gisborne', first published with many alterations by Bishop Percy,§ but since printed literally by Messrs. Hayes and Furnivall, there is (ii. p. 228)

> "The woodweete sang and wold not cease
> Amongst the leaues a lyne."

where "Woodweete" is doubtless the mistake of a copyist for "Woodweele," and this name, whatever form it takes, is in England nowadays only applied to Woodpeckers, though, as before remarked (vol. i. page 235) in Germany, it invariably means the Golden Oriole, as it once did here. Respecting the second syllable of this name and of that next to be considered, nothing can be said that would not be conjectural and therefore better omitted.

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* Bullfinches.

† Bemoaned herself.

‡ Another MS. has *beryde*, made a noise.

§ When Percy published this ballad he "took the liberty," as he subsequently said, to alter this passage and fill up "from conjecture" an obvious gap between the lines above quoted and those that follow in the MS. thus:

> "The woodweele sang, and wold not cease,
> Sitting upon the spraye,
> Soe lowde, he wakened Robin Hood,
> In the greenwood where he lay."

and so Ritson reprinted them in his collection of Robin-Hood ballads (i. p. 115).

"Hickwall," of which the older form seems to be "Hicwaw" (Hollyband, *sub voce* Pic), or "Hickway" (Cotgrave, Fr. Dict. *sub vocc.* Pic *et* Piverd), is possibly from the Anglo-Saxon *Higera* or *Higere* (T. Wright, Vocabularies, pp. 29, 62, 281), which signifies a laugher and doubtless refers, like Yaffil, to the bird's cry. But on the other hand "Hickway" was sometimes written "Heigh-haw" and "Highawe" (Cotgrave, *sub vocc.* Beschebois, Bequebo *et* Oriot), and hence, when its original meaning was lost, it seems to have been corrupted, in obvious reference to the bird's habits, into "Hewhole," a name still used, as it was more than three centuries since, when Turner latinized it into *Huhola;* and now further corrupted in America into "High-hole" or "High-holder" (Bull. Nuttall Club, 1881, p. 84). Yet it must be remarked that *Holzhauer* is said by Bechstein to be one of the German names of the Green Woodpecker.*

Though sufficiently common to be well known in most of the wooded districts of the greater part of England, there are some in which it is said to be seldom seen. In Cornwall, until lately, it was extremely rare; and, according to Rodd, was wholly unknown until 1873 near the Land's End—a locality, however, comparatively treeless. It was long believed never to occur in the Isle of Wight, but there is now good evidence of its occasionally straying thither, an example having been killed, it is said (Zool. p. 6583), near St. Helen's in May, 1855, while others are recorded as seen or heard in the island (Zool. pp. 915, 6853, 9608; s.s. pp. 443, 2224). Precise details of its topographical distribution await further research, which in time may possibly explain its rarity or abundance in certain districts; but its numbers must to some extent depend upon changes that are much within man's control. It is of course encouraged by the making of plantations, but on the other hand the greater attention paid to forests and woods, by removing trees that have attained their full growth, without suffering them to decay and harbour a world of insects, deprives it of much of its sustenance, and to this cause, rather than any other, seems due its increasing scarcity in some places. Yet it breeds regularly, as Mr. More's enquiries shewed, in every county as far as Derbyshire, though becoming much rarer further to the northward, so as to occur but sporadically in the remaining English counties. In Yorkshire, according to Mr. W. E. Clarke, it is only found as a casual visitor on the western side of the county, and in the rest is chiefly confined to a few localities in the vales of York and of Pickering—being wholly unknown, however, in Cawood, one of the largest and oldest woods, near the junction of the Wharfe and the Ouze. In Durham and Northumberland it seems to breed but occasionally, though at Dilston Park in the latter said Wallis, writing in 1769 (Nat. Hist. Northumb. i. p. 319), it was frequent before the wood was cut down. To Scotland in these days the species is a very rare straggler.* Neither Jardine nor Macgillivray knew of an authentic Scottish specimen, and Mr. Gray says he has never seen one recently killed. According to the last there is no proof of the appearance of more than four examples in Scotland—one killed near Jedburgh in 1848, one killed near Aberdeen, one seen in 1868 near Tillery in the same county, and a Sutherland specimen in the Dunrobin Museum. Messrs. Baikie and Heddle say that they had heard of one or two obtained in Orkney. Thompson at first utterly disbelieved in its occurrence in Ireland, though subsequently admitting (App. p. 441) a note by Montgomery to the effect that one was captured in the county of Longford; but Mr. Watters says that a specimen in his collection was shot in the county of Kildare, September 29th, 1847.

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* This dissertation might have been much extended, so as to include many of the other names by which the bird is known; but want of space necessitates its limitation to those mentioned by Mr. Yarrell.

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* Sibbald, in 1614, particularized a "*Picus viridis*" as one of the three species of "*Picus Martius*" (as he, with most old writers, called all birds that climbed trees) found in that kingdom, the other two being "*Picus varius minor*" and "*Picus cinereus*" (Hist. Anim. Scot. p. 15). The evidence of Pennant, Don and Fleming is very slight, and the statement of Selby is known to be erroneous.

In the forests of Norway it breeds generally as far north as the Trondhjem Fjord, beyond which, though Herr Collett says it has reached the Tys Fjord, its appearance is exceptional. In Sweden its ordinary range is hardly higher than lat. 60° N., but Herr Meves saw and heard it in Jemtland. It does not seem to occur in Œland or Gottland, though Herr Bergstrand gives it as found in Åland, and it is unknown in Finland; but it inhabits the countries of the opposite coast of the Baltic as far as Esthonia, becoming however scarcer eastwards. It is certainly not found in northern Russia, but according to Pallas it is not uncommon in western Russia though wholly disappearing towards Siberia. Herr Sabanaeff thinks it may occur in the south-western parts of the Perm Government, but Dr. Bogdanoff says it is already rare in that of Kazan, and from M. Artzibascheff (Bull. Mosc. 1859, p. 48) it would seem to be so even lower down the Volga. It is however common in the Caucasus. Ross (Proc. Zool. Soc. 1842, p. 1) found it in numbers at Trebizond, and also shot it between that place and Erzeroum; which, though Malherbe states that the former Museum of the Zoological Society contained a specimen from Persia, was accounted the most easterly locality for the species, until two examples, obtained at Shiraz by Col. St. John, were referred to it by Mr. Blanford. It is unknown in Palestine,* but Mr. Danford (Ibis, 1878, p. 6) found it well distributed in Asia Minor. It does not seem to occur in the Greek archipelago, though on the mainland it is numerous, and it occurs all along the northern shores of the Mediterranean, as well as in Sicily—but not apparently in Sardinia or Corsica—to Spain, which is occupied solely as is now believed by the very nearly allied form *Gecinus sharpii*. Thence to the Baltic our Green Woodpecker inhabits all the countries of the Continent, in most of which it is to some extent migratory, its distribution therein being no doubt chiefly determined by the same causes as affect it in England.

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* No Woodpecker of any kind has been observed by recent travellers in Egypt. Yet Sonnini declares (Voy. Egypte, iii. p. 363) that he saw this species arriving there with other migratory birds in autumn.

It is now generally conceded that the structure of all animals is, as remarked by Macgillivray, in every way correlated with their mode of life, and in no one animal more so than in any other; but sometimes we are able to trace clearly the connexion between a curious structure and its results, and this is especially so as regards the tongue of the Woodpeckers. That of the present species, with its appendages, has been frequently figured and described, and reference may be particularly made to the description and figures given by the careful author just named (Br. B. iii. pp. 57–60, pl. xv.). This organ is capable of extraordinary protrusion, a property obtained by the elongation of the posterior branches of its bones (the ceratohyal and apohyal), which, after diverging and extending backwards and downwards in a long loop, pass upwards round the back of the head and forwards over the right orbit till they are attached to the cavity of the right nostril.* Each of these elongations is accompanied by a slender muscle, one end of which is attached to the tip of the apohyal and the other to the lower jaw, so that by its contraction the loop is straightened and the tongue thrust out: another pair of muscles folded twice round the upper part of the trachea, and adhering thereto, are attached to the anterior part of the tongue (the basihyal), and by their contraction the tongue is withdrawn. The tip of the tongue is a horny point beset with a few stiff barbs, pointing backwards. On each side of the head, behind and below the ear, is a large elongated parotid gland, whence a duct passes forward to the symphysis of the mandible, and just where the tip of the tongue habitually rests. Through this duct the glutinous secretion of the glands flows copiously, keeping the tip constantly moist, and thus fitted for securing the smaller insects on which the bird so much feeds, while it is freely supplied with mucus each time that it is retracted into the mouth. An examination of the crop shews that the prey is not transfixed, as many people have supposed, by the horny tip of the tongue, but simply captured by the application of its slimy and adhesive surface, though probably the barbs assist in detaching the insects from their hold.

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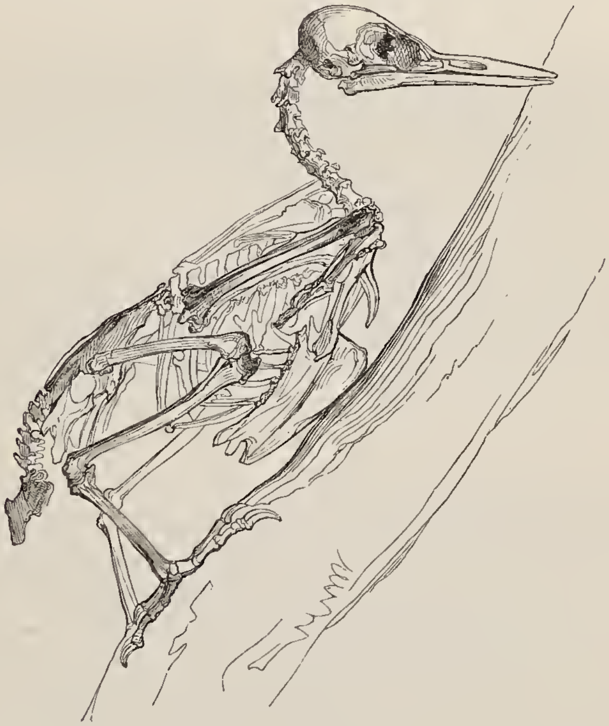
* Nitzsch found that they are sometimes, but rarely, diverted to the *left* side (Naumann, Vœg. Deutschl. v. p. 252). In other *Picidæ*, as Macgillivray observes (Audubon, Orn. Biogr. v. p. 542 and B. Am. iv. p. 289), the arrangement is different. For instance in *Dryobates villosus*, the prolonged bones recurve round the right orbit to reach the line of the posterior angle of the eye, while in *Sphyrapicus varius*, as well as in the two species next to be described, they extend only to the middle of the occiput.

Another anatomical peculiarity which has been supposed to be obviously adapted to the habits of the bird is the shallowness of the keel of the breastbone ; but when the skeleton



of this Woodpecker (as figured above) is compared with that of many other Picarian birds, the same character will be found in some of them which are not known to climb like the *Picidæ*, and in certain members of the latter, not always those which have the greatest power of flight, the keel seems to be proportionally deeper than it is in the present species, though they are believed to climb as well as it does. Thus, though it must be admitted that in one position a low keel allows the bird to place its body close to the tree so as to bring its centre of gravity well forward, and that this may diminish the strain in the muscles of the legs, the supposition does not hold true for many attitudes commonly assumed. A far more curious peculiarity of Woodpeckers is, however, that afforded by the shoulder-blade, the posterior extremity of which is hooked in a way quite unknown among other birds, though with what object cannot at present be conjectured. The descending position of the caudal vertebræ, the last of which is unusually large, shews the mode by which the tail-quills are brought to bear upon the surface of the tree and form a prop.

The adult male has the beak horn-coloured, almost black along the ridge and at the tip, but whitish at the base of the lower mandible : the irides pearly-white : the nasal coverts, forehead, lores and feathers round the eyes black; top of the head bright scarlet as far as the nape, and there often tinged with golden-yellow, the feathers being however dark slate-grey at the base; from the base of the lower mandible extends backward a bright scarlet patch bounded with black; neck, back and scapulars dark sap-green; rump and anterior upper tail-coverts bright golden-yellow, the posterior golden-green; wing-coverts, tertials and outer web of the secondaries, olive-green, the inner web of the last being brownish-black, and, as well as that of the tertials, barred or marginally spotted with dull buffy-white; the primaries brownish-black, their outer web marked like the inner web of the former : tail-quills brownish-black, indistinctly barred with greyish-brown, the middle pair tinged with green at the edge and blackening near the tip, the outer and obsolete pair green; the whole lower plumage from the chin to the vent, with the ear-coverts and sides of the neck, pale ash-green, lighter on the throat and sides, the belly and lower tail-coverts more or less indistinctly barred with a deeper shade; inner wing-coverts dirty white barred with dusky; legs, toes and claws dark greyish horn-colour.

The whole length is about thirteen inches; from the carpal joint to the tip of the fourth and longest primary, six inches and a half.

Adult females have less red on the head, and the mandibular patch wholly black: the dark markings on the belly are often distinctly arrow-headed.

In the young, on leaving the nest, the occiput is dark grey, the feathers only tipped with scarlet; the sides of the head, the throat and neck are dull white, closely streaked with greyish-black, the mandibular patch being hardly perceptible; the breast and belly dull white, strongly barred with greyish-black, the bars taking first the form of crescents and then of arrowheads, each feather being subterminally marked; wing-coverts and back greyish-olive, the former spotted with dull white and yellow, and the latter with yellowish-green; rump dull yellow barred with olive.*

The vignette is intended to represent the sternum of this species.

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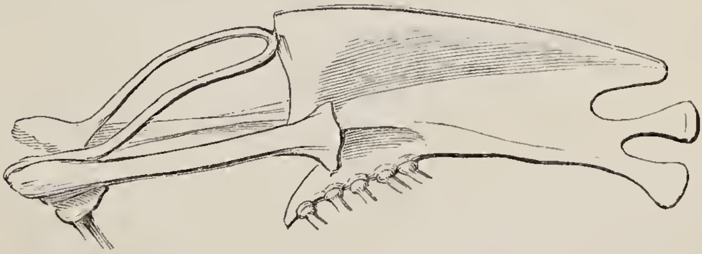
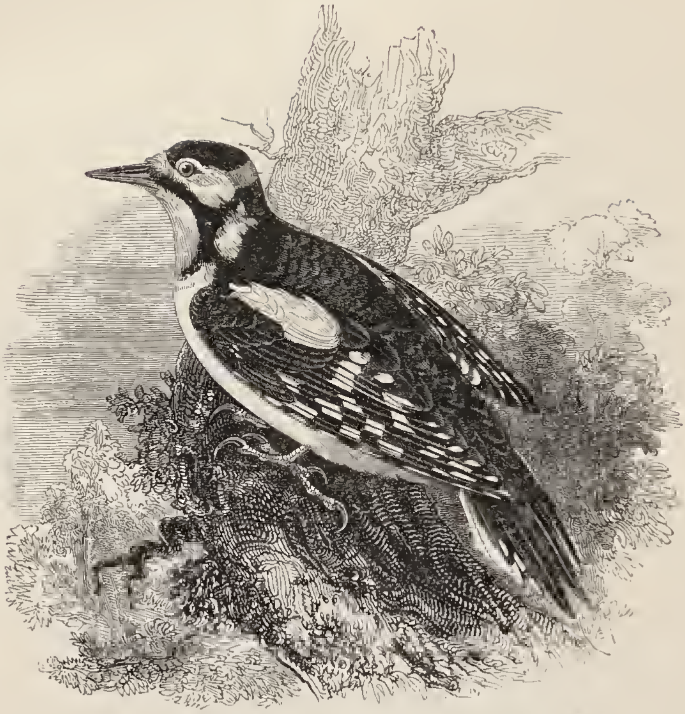
* Mr. Gurney has a beautiful variety, shot in Norfolk (Zool. p. 3800), in which the rump-feathers and some others are tipped with flame-colour. Similar examples are said to be in the Museum at Pisa (Zool. p. 4250); but Italian ornithologists seem to be silent respecting them, though Sig. de Betta records (Materiali per una Fauna Veronese, p. 174) a not less remarkable variety of a fine canary-yellow, except the crown of the head which was bright purple-red.



PICARIÆ. PICIDÆ.



DENDROCOPUS MAJOR (Linnæus.)*

GREATER SPOTTED WOODPECKER.

Picus major.

DENDROCOPUS, *K. L. Koch*†.—Beak about as long as the head, hard, straight, pyramidal; upper mandible with a ridge on each side, running obliquely forwards from the nostril to a shallow groove, parallel to and near the tomia which are angular and inflected; lower mandible equal to the upper, and both ending abruptly, the gonys much nearer the base than the tip. Nostrils basal, oval, covered with hair-like feathers directed forwards. Tongue capable of protrusion, beset at the tip with horny barbs. Wings moderate; the first primary very short, the fourth longest. Tail of twelve graduated rectrices, the outer pair very short and overlying the next, which with the rest are pointed and have stiff decurved shafts, with hard webs. Tarsi strong, slightly feathered in front above; toes two before and two behind, the fourth which is turned backwards much longer than the third; claws, strongly hooked, grooved and very sharp.

THIS species, though generally less common than the last, is in some places not rare; but hardly anywhere can it be called numerous, while there is even greater difficulty than with the former in defining its topographical distribution, and an absolute impossibility of accounting for the same. It seems seldom, if ever, to inhabit precisely the same spots as the Green Woodpecker, yet its haunts are very varied in character—large oak-woods, hedgerows where ashes form the prevalent timber, holts or small plantations of poplars and alders, and the lines of pollard-willows that skirt so many rivers. But at times stray birds appear, and occasionally stop for a while, in wooded districts of almost any sort. In many of its habits—its solitary and mistrustful disposition, its mode of flight and of climbing—it closely resembles its larger relative ; but it usually affects trees of smaller growth, and more frequently alights and seeks its food on the upper branches than on the trunk, and, indeed, would seem sometimes to sit crossways on a bough after the usual fashion of birds. It is rarely seen on the ground, for it does not make ants its prey; but, shy as it is, will readily enter gardens and orchards in quest of cherries, plums and other fruit, being a somewhat general feeder. Yet insects unquestionably form its chief sustenance, except during the season that it can get nuts, acorns, perhaps beechmast, the seeds of firs and berries of the mountain-ash. Like the preceding, this bird has several names in English. Setting aside those by which it is well known in books, it is very generally called the Pied Woodpecker, and more locally the French Pie, Wood-Pie, Spickel (possibly a diminutive of Speight) as well as Hickwall and Witwall, which it has in common with the other British Woodpeckers.

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* *Picus major*, Linnæus, Syst. Nat. Ed. 12, i. p. 176 (1766).

† *Dendrocopos* (errore) Koch, Säugthiere und Vögel Baierns, p. 72 (1816).

Confining itself almost entirely to the higher branches of trees, and having no cry but an occasional *quet, quet,* or *gick, gick* with, at intervals, a low *tra, tra, tra, tra,* this bird frequently escapes observation. Yet in spring, and sometimes at other seasons, it has the habit of producing an outburst of noise that is far-reaching and attractive of the most incurious attention. This is commonly thought to be made by the bird putting the point of its bill into a crack in the branch of a tree—an erroneous belief of which more will be said in the account to be given of the next species.* No fissure is needed for the production of this amazing sound, which is made by the bird rapidly hammering with its beak on the surface of the wood. It has also been generally accepted that the intent of this hammering was to alarm the insects that infest the branch and induce them to quit their recesses; but, as in so many other cases, when we try to assign an object to any particular act of an animal, we are apt to confound conjecture with observation, and this interpretation seems to be unsupported by direct evidence. The fact that the extraordinary reverberation is most often heard in spring points to its being in place of a vocal call-note, and connected with the business of reproduction. Montagu says that, on putting a hen-bird of this species off her nest, she flew to a branch near by, and there began her jarring noise, which was soon answered by her mate from a distant part of the wood. Others who have visited nests of this Woodpecker could supply similar testimony, and it is certainly not according to the habit of most birds that at such an agitating moment they should busy themselves with a performance having for its sole object the procuring of food.

This bird makes its nest in trees, sometimes hacking for itself a hole with a circular entrance, after the fashion of the Green Woodpecker, but, as might be expected, smaller in diameter; though it not unfrequently occupies, and that year after year, a naturally-formed cavity in a dead branch, generally however deepening and prolonging it. The eggs are laid on the bare wood or on such fine chips as may chance to be left at the bottom, and are from five to seven in number, of a pure white†, glossy and translucent, measuring from 1·09 to ·94 by from ·76 to ·69 in. Both parents take part in incubation, and the hen especially sits so close as frequently to render herself liable to capture. The young are hatched towards the end of May or beginning of June, and can shift for themselves in a few weeks. Taken from the nest, they can be reared without much difficulty; but as they grow older they require more care and accommodation to keep them in health than most people are willing to bestow,* and consequently do not long survive in captivity.

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* See the editorial note in Pennant's 'Br. Zool.' Ed. 1812, i. p. 321.

† Stained eggs are occasionally found as in the case of the Green Woodpecker already mentioned (page 459, note).

This species occurs all over England, and appears to breed in every county except Cornwall, Westmoreland and Cumberland; but it seems to be more common in the western midlands than elsewhere, and certainly becomes rarer northwards, so much so that in Northumberland Mr. Hancock has known only one instance of its nesting. In Scotland the counties of Perth, Aberdeen, Banff and Inverness are alone recorded as those it inhabits in the breeding-season, and even then in very small numbers.† But at other times of the year, and in autumn especially, it is much more generally dispersed, so as indubitably to shew that it is an immigrant — a conclusion long ago announced by Selby, who, in 1833, wrote that "In Northumberland scarcely a year passes without some of these birds being obtained in the months of October and November. This induces me to suppose that they are migratory in some of the more northern parts of Europe, perhaps in Norway and Sweden. They arrive about the same time as the Woodcock and other equatorial migrants; and generally after stormy weather from the north or north-east." The fact has since been fully substantiated. In those months of 1849 many examples were shot near Newcastle-on-Tyne (Zool. p. 2770), and in the autumn of 1861 a visitation, composed chiefly, it would seem, of birds of the year, was traced at intervals, mainly on the east coast, from the most northerly of the Shetlands‡ (Zool. p. 7932) to the Isle of Wight (Zool p. 7847)—the occurrences in Norfolk and

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* Writing in 1839, Mr. Yarrell said that some years before he saw a brood of this species, which had been taken and caged by a gate-keeper of Kensington Gardens. It was then frequently to be seen and heard there, but it does not seem to have been observed of late (Zool. 1879, p. 288).

† On this subject see Mr. Harvie Brown's paper (Zool. 1880, p. 85).

‡ One of the first birds shot there (Sept. 3d) has however been declared by Gould to belong to another species, of which more presently. An interesting account of the behaviour of these castaways is given by Saxby.

Cambridgeshire being very numerous. At the same season in 1868, there was another and perhaps a larger immigration, which, beginning as before with Shetland, reached quite across Scotland, as testified by Mr. Gray, but the number appearing in England does not seem to have been so great as in 1861. In Ireland, Thompson and Mr. Watters have noticed about twenty examples, nearly all in autumn or winter, and undoubtedly wanderers from similar migrating bands, for the species is not known to breed in that kingdom; but Mr. Blake Knox informed the Editor that it has occurred in many other instances, chiefly in the north of the island, which have not been recorded.

The migratory movements of 1861 and 1868 brought this bird to the Færoes, where in September of the former year Herr Müller got two examples, and in October of the latter three came to his knowledge; but without such casual events the range of this species is very wide. There is no doubt as to its inhabiting every European country, and Messrs. Dresser and Sharpe consider that it reaches across Siberia to Japan; for, on comparison, they could see no difference in specimens brought from that empire. In Asia its northern extension depends of course on the tracts of forests; but its southern limits are very uncertain, for along them from the Yellow Sea to the Bosphorus, occur a considerable number of allied forms which have been described as distinct species, and it seems likely that ornithologists will in future regard some of them, though how many it is impossible to say, as but local races of the present. Some years ago, Swinhoe (Proc. Zool. Soc. 1863, p. 268) united four of these so-called "species" which inhabit China, remarking that "the further north they extend the whiter and more spotted they become," until in Amoorland the form is said to be identical with our own bird. Another group of four more, occurring between the Persian Gulf and the Mediterranean have been conjoined under the name *Picus syriacus* of Hemprich and Ehrenberg, typical specimens of which are easily distinguished from the ordinary European form by, among other characters, the absence of a black bar behind the ear-coverts, and the presence in the young of an imperfect red-and-black belt across the chest, which is lost in the adult. But the Pied Woodpecker found near Constantinople presents an intermediate phase, and, what is just as important, examples obtained in Germany, and presumably of German origin, occasionally exhibit, says Dr. Altum, red markings on the breast, though in other respects they differ not from the normal *Dendrocopus major*. It is plain that a much longer series of specimens must be brought together before we can reach any positive conclusion as to the range of our species, the difficulty in determining which will thus be seen to arise from the almost insoluble problem, what is and what is not to be considered a local race*. The question also offers itself whether the Mauritanian Pied Woodpecker, the *Picus numidicus* of Malherbe, should not be classed in the same category, though its longer bill and its permanent red-and-black pectoral belt—the effects perhaps of protracted isolation—may afford arguments for regarding it rather as a representative species. It remains to be said of our Pied Woodpecker that it is found in the Canary Islands (Ibis, 1872, p. 168), though in no other of the Atlantic groups, and in the north of Europe reaches the arctic circle. Its topographical distribution on the continent can no more be given than in England.

The old male has the beak of a dark bluish horn-colour, paler beneath : irides bright red : nasal coverts black ; forehead buff; lores, sides of the head, including the ear-coverts and round the eyes, white; top of the head glossy black, occiput bright glossy scarlet; a black mandibular stripe extends backward below the ear-coverts on each side and separates into three branches, the lowest passing downwards to form a triangular patch on the side of the throat, the highest ascending to the nape, behind the scarlet occiput, where it meets its fellow from the other side, and the middle branch running backward encloses, between it and the upper-most, a white patch on the side of the neck, and then unites with the glossy blue-black of the nape, back, rump and upper tail-coverts; the smaller wing-coverts are black; the larger, with the scapulars, white; the wing-quills black, with from two to five well-defined oblong or subtriangular white spots on the outer web, and well-defined rounded, marginal white spots on the inner; the two middle tail-quills wholly black, the next pair black with a tip and incomplete subterminal bar of white, and so in succession, the white increasing in each pair until its relative proportion is reversed, but the outer and obsolete pair are wholly black; the chin, middle of the throat, breast and belly dirty white; the vent and lower tail-coverts bright scarlet: legs, toes and claws greenish-grey.

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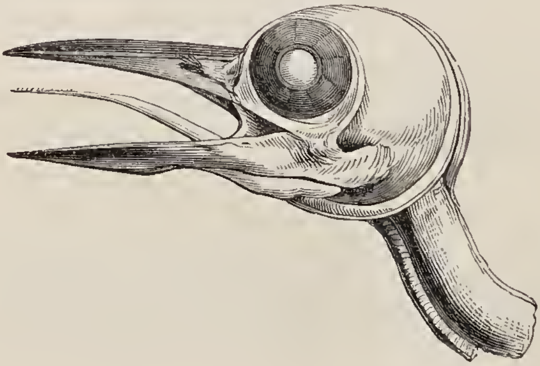
* The same difficulty attends several of the North-American Woodpeckers, not only of a closely-allied genus, but of the genus *Colaptes* (see page 276, note); but it has been in a great measure overcome by the assiduity with which the ornithologists of that country have collected, and the philosophical spirit in which they have examined, long series of specimens from various localities.

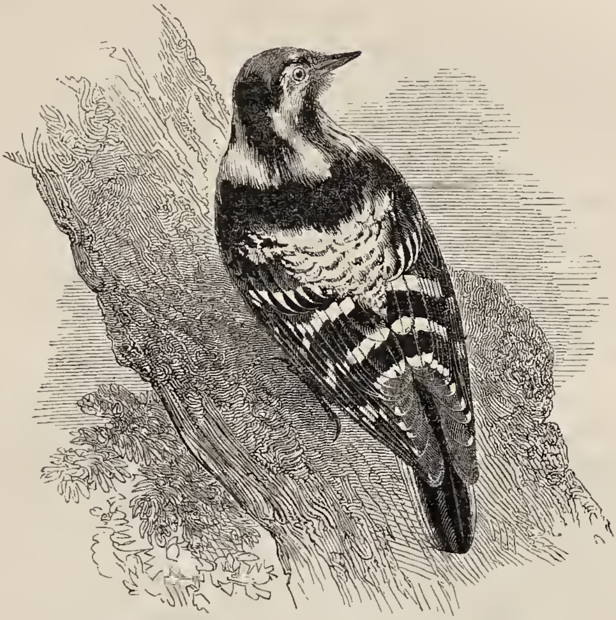
The whole length is nearly nine inches and a half; from the carpal joint to the tip of the wing about five inches and a half; but specimens vary somewhat in dimensions.

The adult female is slightly smaller and has no red on the head.

The young of the year much resemble the adults, but have the crown of the head red, extending in the males to the occiput, but not so far in the females; and some examples have the flanks indistinctly streaked. In this stage they have been confounded by some authors with the Middle Spotted Woodpecker, *Dendrocopus medius*, of the Continent.

The vignette shews the head of this bird, as seen when skinned. In this species and the next, the tongue-bones are not prolonged beyond the middle of the head, as they are in the Green Woodpecker above described (page 466).





Dendrocopus minor (Linnæus[*]).

THE LESSER SPOTTED WOODPECKER.

Picus minor.

The Lesser Spotted Woodpecker resembles the species last described both in appearance and actions, but it is much smaller, and being, partly perhaps on this account, easily overlooked is generally deemed a rarer bird in England. It often shews a greater partiality than does its congener to tall trees, especially elms, from the topmost boughs of which, in some localities, its resonant hammering may be heard at intervals many times in the course of a spring-morning. This curious noise, though much louder than that made by the preceding species, is so very like it, that one cannot say to which of the two Plot referred in 1677, when promulgating, as he seems first to have done,[†] the common but mistaken opinion as to its origin, already mentioned (page 471). A few years after, Ray, in a letter to Tancred Robinson (Correspondence, Ray Soc. Ed. p. 150), suggested that Plot's "Wood-cracker" was the present species, having, he said, "observed that bird sitting on the top of an oaken tree, making with her bill such a cracking or snapping noise, as we heard a long way off, the several snaps or cracks succeeding one another with that extraordinary swiftness that we could but wonder at it;" but avowing his inability to discern how it was effected, as he did also later (Syn. Meth. Av. p. 43), though then mentioning the possibility of its being done "creberrima percussione." The late Mr. W. T. Bree also confessed (Mag. Nat. Hist. i. p. 301) that, though he had watched the operation within a few yards' distance, he was "at a loss to account for the manner in which the noise is produced;" adding, in another communication (*op. cit.* v. p. 64), that the strokes of the bird's bill against the tree, rapid as they were, fell far short, as it appeared to him, of the almost incredible celerity with which the sounds were repeated. But as Dovaston quaintly and truly says (*tom. cit.* p. 148): "The motion is so quick as to be invisible, and the head appears in two places at once;" adding "it is surprising, and to me wondrously pleasing, to observe the many varieties of tone and pitch in their loud churring, as they change their place on boughs of different vibration." Here the matter must be left for further investigation; but the statement that the noise is ever made by the knocking of the bird's beak against the sides of a chink is wholly unsupported by direct evidence; while it can certainly be produced by blows delivered with the utmost rapidity upon the surface of a branch, and there is much reason to believe its function to be that of an instrumental instead of a vocal love-call, as first suggested by Mudie (Brit. Nat. ii. p. 293).

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[*] *Picus minor*, Linnæus, Syst. Nat. Ed. 12, i. p. 176 (1766).

[†] He writes (Nat. Hist. Oxfordsh. p. 175) of a bird "somtimes seen, but oftner heard in the *Park* at *Woodstock*, from the noise that it makes, commonly called the *Wood-cracker*: Described to me (for I had not the happiness to see

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it) to be about the bigness of a *Sparrow*, with a *blue* back, and a *reddish* breast, a *wide* mouth and a *long* bill, which it puts into a crack or splinter of a rotten bough of a Tree, and makes a noise as if it were rending asunder, with that violence, that the noise may be heard at least *twelve score* yards, some have ventured to say a *mile* from the place." It will be seen that the bird described was a Nuthatch, but the noise was no doubt made by a Woodpecker.

The food of this species seems to consist almost entirely of insects which it dislodges from the bark of the trees it frequents, or is said occasionally to seek among long grass on the ground, and there is apparently no instance on record of its taking fruit or seeds. It is accordingly free from the thefts in orchards or gardens imputed to its congener; and, owing perhaps to its small size, from the graver charge of damaging forest-trees, which to some extent can be maintained against others of its Family, though it is clear that even if Woodpeckers were far more mischievous than is alleged of them in Germany,* they are nowhere in this country sufficiently numerous to inflict any serious injury. Like other species the present breeds in holes of trees—mostly pears and apples—generally, if not always, cutting them out for itself, and in such cases the aperture and passage leading to the chamber inside are no larger than are needed. The eggs, in number from five to nine—though seldom more than six—are laid at the bottom on the bare wood, or at most on a few fine chips that have not been removed, and are white, glossy and translucent, measuring from ·83 to ·66 by from ·67 to ·53 in.† The only vocal note this Woodpecker seems to utter is a *tic, tic,* or *kink, kink* (which has been likened to that of a Blackbird when going to roost) sometimes repeated continuously, but the remarkable noise made in spring, as before described, has caused it to be known in some districts as the "Crank-bird" and "Pump-borer"—the sound being supposed to resemble that made by an auger when used on the hardest wood. In certain places it is called, like others of its Family, Hickwall or Witwall; and some writers have applied to it the name of Barred Woodpecker, the neglect of which is to be regretted for brevity's sake.

This species is said to be more common in several districts than the Pied Woodpecker, especially near London, and in

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* B. Altum, 'Unsere Spechte und ihre forstliche Bedeutung.' Berlin: 1878.

† They are thus generally smaller than Wrynecks' with which they can be easily confounded; but their shell is slightly thinner, has a finer grain and a higher polish.

Berks, Wilts and Somerset (Zool. pp. 5920, 9539). It used to frequent Kensington Gardens, and was seen there so lately as May 1878 (Zool. 1879, p. 288); but the western midlands, the counties of Gloucester, Hereford, Salop, Worcester and Warwick, appear to be its chief resort. Cornwall perhaps excepted, it breeds in every English county as far as York, but there becomes very rare, and is only a casual visitor in Lancashire or to the northward—Mr. Hancock knowing of but three instances of its appearance in Northumberland, and none in Durham. Mr. R. Gray says he has never examined a specimen killed in Scotland; but Mr. Edward (Zool. p. 6671) records two in Banffshire, one of which was only seen, while the other, shot at Mayen, was sent to him about 1845, and one is said by Mr. Shearer on Dr. Sinclair's authority (Proc. R. Phys. Soc. Edinb. ii. p. 336) to have been obtained in Caithness.* Low (Faun. Orcad. p. 49, note) says he shot one at Stromness in the winter of 1774, and Messrs. Baikie and Heddle mention another observed in Sanday; but in neither case is there assurance that the species was rightly determined. Thompson (B. Irel. iii. p. 441) and Mr. Watters state that five or six specimens have been obtained in various parts of Ireland, two of which, procured in Wicklow in 1847 and 1848, were examined by the latter, and Col. Bulger records (Zool. p. 5680) one seen near Fermoy in April 1857.

The geographical range of this species is very extensive, though its limits have yet to be defined. In Norway it goes as far to the northward as the birch-forests allow. Wolley found it breeding by Lake Enara in northern Finland, and Messrs. Brown and Seebohm obtained it on the Lower Petchora. There is reason to believe that it stretches across the whole of Siberia† and reaches Japan, for a specimen from Jeddo is referred (Ibis, 1879, p. 29) to this species; but concerning its southern boundary in Asia we know nothing—except that it is not included as a bird of China by Swinhoe, nor of Persia by Mr. Blanford—until we come to Asia Minor where Mr. Danford (Ibis, 1878, p. 7) says it is common in the Bulgar-dagh. It is absent from Syria, but occurs in winter in Greece, and thence westward along the northern seaboard of the Mediterranean, including Sicily and Sardinia; but it is rare in Spain and is not yet recorded with certainty from Portugal. It however inhabits Algeria, for though formerly North-African examples had a distinct name, *Picus ledoucii*, given them by Malherbe, they are now admitted not to differ specifically; and it is found in the Azores, but not in the other Atlantic Isles. Throughout the continent of Europe it is very variously distributed, and in a way that cannot at present be explained, but it is believed to occur in every country, though in parts of some its appearance is seasonal or irregular.

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* The evidence of Sibbald is altogether vague, while that of Don and Pennant really amounts to nothing and may be safely neglected.

† Siberian examples present, as is often found with other species, more strongly contrasted tints, and have been differentiated by Bonaparte (Consp. Volucr. Zygodactl. p. 8, Ateneo Ital. Maggio 1854) as *Picus* (*Trichopicus*) *kamtchatchensis*, regarded as a valid species by Malherbe (Monogr. Picid. i. p. 115).

The male has the beak dark grey: irides reddish-hazel: nasal coverts and forehead brownish-buff; lores, sides of the head, and ear-coverts, brownish-white; crown of the head bright glossy scarlet, bounded by black on either side and behind; from the base of the lower mandible a black stripe passes backward below the ear-coverts; nape, upper part of the back, scapulars and lesser wing-coverts, black; middle of the back white, barred transversely with black; rump, upper tail-coverts and greater wing-coverts, black, the last barred and tipped with white; wing-quills dull black, with from two to five well-defined, oblong or subtriangular, white spots on the outer web, and well-defined, rounded, marginal, white spots on the inner web, the last extending wholly across the web of the inner quills, and forming four conspicuous and almost regular white bars; the four middle tail-quills black; the next pair tipped, and obliquely edged outwardly, with white, with an incomplete subterminal black bar; the succeeding pair black only at the base, with a subterminal black bar, and a second incomplete black bar on the inner web; the next white, with one incomplete and one complete black bar; the outer and obsolete pair black; the chin, throat and lower parts generally, brownish-white, the sides of the breast with a few black streaks which on the flanks and lower tail-coverts take almost the form of bars: legs, toes and claws lead-colour.

The whole length is about five inches and three-quarters; from the carpal joint to the tip of the wing three inches and three-eighths; but specimens vary considerably in size, those from the north of Europe being larger than those from the south.

The female ordinarily has the top of the head brownish-white, without any red, though specimens are known in which there is a trace of that colour; the black of the occiput begins forwarder, and the lower parts are much browner.

The young of both sexes appear to have the crown red, but much more evident in the males than in the females; and the markings of the plumage generally which are black in the adult are then brown.

Beside the three species of Woodpecker just described, which alone deserve the name of British, so many others have been at one time or another enrolled by various writers on our list, that some remarks upon them are needed if only to justify the omission of their history from the present volume.

First of them comes the Black Woodpecker, *Picus martius*,* of which Latham in 1787 (Syn. B. Suppl. pp. 104, 284) said he had heard of its being once met with in the south of England. Mr. Harting has compiled a list (to which several additions might be made) of more than thirty supposed occurrences of the species in this country; but Mr. J. H. Gurney had already contributed to Messrs. Dresser and Sharpe's work a critical revision of them, which completely disposes of the claims set up in nearly every instance. One of the strongest pieces of evidence in favour of the admission of this Woodpecker was Montagu's assertion, afterwards repeated by Latham and many other authors, of the then Lord Stanley having shot a *Picus martius* in Lancashire. But Mr. T. J. Moore found that in Lord Stanley's copy of Latham's work he had erased the passage and written on the margin "a mistaken idea." This remark, it is believed, will apply to all the other supposed cases, except a few which there is reason to think have been recorded from unworthy motives. The statement of Gould that "there is not a certified British-killed specimen in any of our museums or private collections" seems to be perfectly true;* and it must be added that most of the persons professing to have seen an example of this species in England have been singularly unfortunate as to the locality of their vision. This species is almost strictly an inhabitant of pine-forests from the arctic circle to Spain, where Lord Lilford found it in the summer of 1876, and in Asia from Turkey to Japan. But, though a bird of powerful flight, it may be said scarcely ever to leave its pine-forests, and hence within any period that we may deem historic there has been no part of England suited for its habitation. In Scotland it may have been otherwise, but there is no evidence to that effect; for Sibbald's statement, to which some weight has been attached, does not, when rightly understood, bear on the point.† This brief notice cannot be concluded without reference to Mr. Hudleston's excellent narrative (Ibis, 1859, pp. 264–273) of the discovery by himself and the late John Wolley of some nests of *Picus martius* in Sweden, which added much to our knowledge of its habits.

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* That this species should be regarded as the "type" of the Linnæan genus *Picus* seems to the Editor obvious from the fact that the adjective *martius* loses all its meaning when separated from the substantive *Picus*. It is a very great error to retain the last as the generic term for the pied Woodpeckers, which were carefully separated from *Picus* by Koch in 1816 (see above, page 470) ten years before Boie (Isis, 1826, p. 977) applied *Dryocopus* to the Black Woodpecker.

The next species for consideration is the Middle Spotted Woodpecker, *Dendrocopus medius*, which Pennant in 1768 said (Br. Zool. Ed. 2, i. p. 180) he was informed was found in Lancashire. Though in his supplemental volume of

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* Notwithstanding the examples recorded by Mr. Garth and Rodd (Zool. pp. 1298, 9847).

† He used the name "*Picus Martius*", as did most old writers, in a general sense for birds that climbed trees, including not only all Woodpeckers, but the Nuthatch and Tree-Creeper (see above, page 464, note).

1770 he gave a figure of it (pl. ix. fig. 1), he stated (p. 20) that it seemed only a variety of his Greater Spotted Woodpecker. Yet this did not hinder him from subsequently (*op. cit.* ed. 4, 4to, p. 208; 8vo, p. 244) introducing it, but still doubtfully, as a distinct British species. The fact has long been recognized that he, and other authors who followed him, mistook the red-headed young of *D. major* for this purely continental bird. An attempt has lately been made to restore it to our list on a statement by St. John (Nat. Hist. Highl. ed. 1849, p. 76; ed. 1879, p. 89), in which the word "*medius*" was probably an accidental error for "*major*", and on that of Mr. Harting (B. Middles. p. 108). Mr. Bond however assures the Editor that the birds referred to in the latter passage, were certainly, as might be expected, the young of *D. major*.

The third species is a very recent candidate for admission to the British Fauna, and its case is fortunately of the simplest kind, resting solely on a specimen obtained in Unst by Saxby in September 1861, when that island and others of the group were visited by *D. major* in some numbers. The specimen having passed into the possession of Mr. J. H. Gurney, was minutely and accurately described by Messrs. Dresser and Sharpe (B. Eur. v. p. 21), and by them considered a variety of that species; but, being afterwards submitted to Gould, it was declared by him to be an immature example of the White-backed Woodpecker, *D. leuconotus*, and was accordingly in 1873 included and figured as such in his work (B. Gr. Br. iii. pl. 71). Thanks to Mr. Gurney the Editor has been allowed to examine this specimen, and he has no hesitation in stating that Gould's determination was utterly wrong, and that beyond all doubt the bird is, as originally suggested by Messrs. Dresser and Sharpe, a variety—slightly albescent—of *D. major*. The reasons of this conclusion have elsewhere (Zool. 1881, p. 399) been fully adduced, and want of space compels their omission here. It is probable that the ground of Gould's error lay in the fact that he had no example of the young *D. leuconotus* with which to compare the Shetland specimen. As it is the Editor with the greatest confidence refuses the White-backed Woodpecker a place even among the stragglers to this country.

The fourth and fifth claimants are from the New World, and hence, according to the principle on which the present Edition of this work is conducted, are from that cause alone inadmissible here. But it may be convenient to state that a pair of the former of them, the Hairy Woodpecker, *Dryobates** *villosus*, was said by Latham in 1787 (Syn. B. Suppl. p. 108), to have been shot near Halifax in Yorkshire by a Mr. Bolton, who was known to have made a collection of North-American birds, and hence an opinion, very likely just, arose† that instead of the English Halifax the capital of Nova Scotia was meant. Be that as it may, there is no doubt that a bird, said to have been killed near Whitby in 1849, as recorded by Mr. Higgins (Zool. 2496), proved to be of this species (Zool. 2527), while Mr. Bird states (*loc. cit.*) that he believes another example was obtained in Worcestershire some years before. As to the other species, the Downy Woodpecker, *Dryobates pubescens*, Mr. O. Pickard-Cambridge recorded (Zool. p. 6444) an example in his possession, as having been killed at Bloxworth in Dorset, in December 1836. It had long passed for a Lesser Spotted Woodpecker till its very distinct characters were recognized by Mr. Bond.‡

A sixth exotic species is the Northern Three-toed Woodpecker, *Picoides tridactylus*, figured in 1809 by Donovan (Br. B. vi. pl. 143) because, as he said, a "solitary individual of this was lately shot in the north of Scotland." Nothing more is known of it as a reputed British bird,* and this evidence is too vague for serious consideration.

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* In deference to the practice of some of the excellent ornithologists of the United States, the Editor uses this generic term; but he must confess his ignorance of the characters whereby it is separable from *Dendrocopus*.

† Founded apparently on a statement made by Joseph Sabine to Fox, and published by him in 1827 (Syn. Newc. Mus. p. 105).

‡ In regard to these examples of American Woodpeckers it may not be amiss to quote the following passage from Walcott's 'British Birds' (i. p. 49) published in 1789:—"An old soldier I employed in the *West* of *England*, to procure me birds for this work, on bringing me one of the *spotted Woodpeckers*, told me, he was employed by a *Captain Lockhart*, in 1764, to take their young in holes in *Beaver trees*, at *Point Core*, in *West Florida*; that they were put in cages, and hung in the cabbin window of a ship, where some of them were fed by the old ones, while the ship lay at anchor: the rest had large black *emmets* given them. He added, that the above gentleman brought them to England, and turned them loose in his park; they were fed, during the passage, with eggs, and crumbs of bread."

Lastly we have another purely American species, the well-known Flicker or Golden-winged Woodpecker, *Colaptes auratus*—one of the most characteristic birds of the Eastern United States and Canada. An example is recorded (Zool. p. 6327) to have been shot at Amesbury in Wiltshire in the autumn of 1836; but, on the principle already acted upon, its transatlantic origin excludes it from admission to the present work; it may however be remarked that a specimen of this far-migrating bird is said (Journ. für Orn. 1856, p. 355) to have been sent from Greenland.

The *Picidæ* form in Prof. Huxley's arrangement of birds the group *Celeomorphæ* (Proc. Zool. Soc. 1867, p. 467), since raised to a higher grade by Prof. Parker (Trans. R. Microsc. Soc. 1872, p. 219) under the name of *Saurognathæ*. It may be convenient to state that the substance of Malherbe's pretentious but unsatisfactory 'Monographie des Picidés' (Metz: 1859–62) has been succinctly given in Sundevall's 'Conspectus Avium Picinarum', and that the structure of the European species is the subject of a treatise by Kessler (Bull. Soc. Nat. Mosc. xvii. p. 285) and of a shorter notice by Nitzsch, published many years after his death (Zeitschr. für Ges. Naturw. 1866, p. 477).

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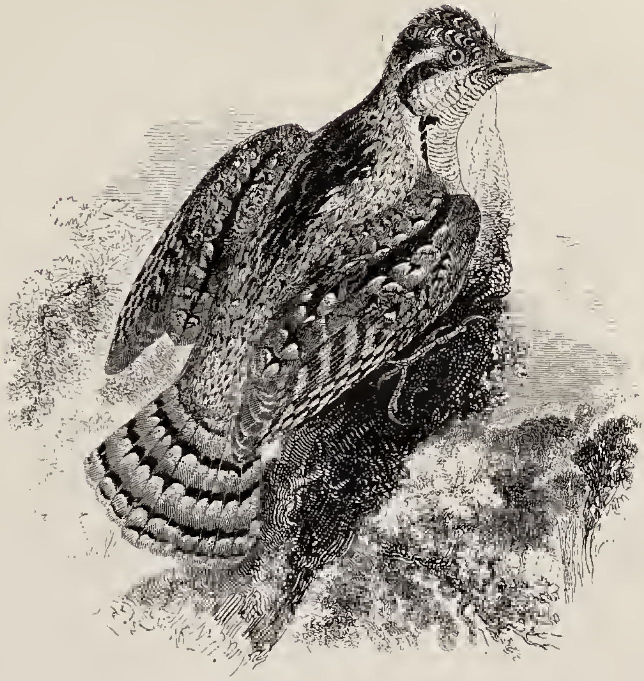
* The sale-catalogue of Donovan's Museum in 1818 includes as Lot 420 a bird of this species to which is added the remark "very rare; discovered in Scotland'; but this must not be taken to refer to the reputed Scottish specimen, though perhaps artfully intended to convey that meaning. When he had a really British specimen his words were expressly to the point. A later sale-catalogue in which the name of this species appears is too obviously fraudulent to require further notice (*cf.* Ibis, 1863, p. 375).



IYNX TORQUILLA, Linnæus*.

THE WRYNECK.

Yunx torquilla.

IYNX, *Linnæus*†.—Beak shorter than the head, hard, straight, nearly conical, sharp at the tip. Nostrils basal, linear, partly closed by a membrane. Tongue capable of protrusion, the tip horny and smooth. Wings moderate; the first primary very short, the third or fourth longest. Tail rather rounded, of ten rectrices, with straight shafts and webs of ordinary character. Tarsi strong, slightly feathered in front above; toes two before, and two behind, the fourth, which is turned backwards, about as long as the third; claws much hooked, grooved and very sharp.

THE WRYNECK is a well-known spring-visitor to this country, though less often seen than heard; for, from the time of its arrival, usually in the first half of April, until midsummer or thereabouts, its monotonous cry, not unlike that of the Kestrel, and consisting of the notes *que, que, que,* many times and very rapidly repeated, resound from many a copse, orchard and tall hedgerow in the greater part of England. During the rest of its sojourn it is, however, absolutely mute. As its coming generally precedes by a few days that of the Cuckow, the Wryneck has acquired several local names in connection with that bird, and is very commonly called the Cuckow's Leader or Cuckow's Mate[*] ; but it is scarcely necessary to observe that there is no near affinity or point of real similarity between them, nor does the Wryneck shew any partiality for the company of the species to which it is referred in popular speech. It is altogether solitary in its habits, seldom associating even with its own partner, and that only for a portion of its stay with us.

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* *Yunx* (by mistake) *torquilla*, Linnæus, Syst. Nat. Ed 12, i. p. 172 (1766).

† *Yunx* (by mistake) *loc. cit.*

Without any bright or attractive colours, the Wryneck is still a beautiful bird, from the harmonious blending of a few sober tints, delicately pencilled with darker shades, which its plumage displays. Its ordinary name comes from its habit of rolling its head and neck in a wonderful way, especially when found on its nest in a hollow tree, when it may easily be captured by any one who cares to try. But the undulating motions of the bird, dimly seen in the gloom of its retreat, with the loud hissing noise it makes, are almost always enough to scare a marauder of inexperience ; for they never fail to suggest, as is doubtless their intention, that the hole into which he is about to thrust his hand has a snake for its tenant.[†] Becoming thus an object of terror to a timid intruder, it takes advantage of a moment of indecision on his part, and slipping rapidly past darts from a situation whence escape seemed impossible. Should however its disturber be undaunted and, anticipating its flight, seize it in his grasp, it has yet resources left that are astonishing even to those who do not witness them for the first time. It ruffles the feathers of its crown, extends and extraordinarily attenuates its neck, throws its head from side to side, with the most grotesque effect, or twists it round over its back, closing its eyelids as if in death, and, clinging to the fingers with its sharp claws, will hang downwards as though cataleptic, until suddenly disengaging itself it takes wing to the bewilderment of the beholder.*

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[*] Also Cuckow's Maid, and a writer in the last century says (Gentl. Mag. lxvi. p. 386) Cuckow's Man. According to Pennant its Welsh name is *Gwâs y gog*, having the same signification as the last, and in Scandinavia it also bears names connecting it with the Cuckow.

[†] Hence another common name for the species is Snake-bird, paralleled by several German equivalents, among them *Natterwindel* and *Natterhals*. It is interesting to know that a name of exactly the same meaning as the last (*Shay-ling*, i.e. Snake's neck) is given to the Wryneck in at least one part of China (Ibis, 1875, p. 125). The peculiarity was known to Aristotle, and possibly led to the cruel use of the bird as a love-charm, to which several classical writers refer, as Pindar (Pyth. iv. 214 ; Nem. iv. 35), Theocritus (II. 17, 30) and Xenophon (Memorab. III. xi. 17, 18).

This bird feeds almost exclusively on insects, especially on ants, and may be often seen on the ground at their nests, where it not only clears off such of the animals and their pupæ as may be exposed, but removing the soil with its bill, introduces the long vermiform tongue with which it is furnished into the recesses of their passages in search of others that are out of sight. The anatomical structure of this organ, represented in the next vignette, much resembles that found in the Woodpeckers, as already described and figured (pages 466, 476), the hyoid bones being elongated and produced over the head in exactly the same way, and worked by a muscular arrangement of like character, while glands situated beneath the lower jaw secrete a similar glutinous mucus that is conveyed by a duct on each side to the interior of the fauces. This secretion covers the horny tip of the tongue, which can be thrust out to a considerable distance, and on an insect being touched therewith it immediately sticks to its surface, and is transferred to the mouth so instantaneously that the eye is unable distinctly to follow the action of the organ. Montagu, after watching a Wryneck which he had in a cage and provided with emmets and their "eggs" (pupæ), remarks that "it was curious to observe the tongue darted forward and retracted with such velocity, and with such unerring aim, that it never returned without an ant or an egg adhering to it," the motion being so rapid that the pupa, "which is of a light colour, and more conspicuous than the tongue, has somewhat the appearance of moving towards the mouth by attraction, as a needle flies to a magnet." In consequence of the Wryneck feeding so frequently at ant-hills, its tongue, as Knapp states, collects much soil therefrom, and its stomach contains a larger portion of grit than is usually met with in that of other small birds; but its food is not entirely collected in this way, for it waylays ants on their journeys up and down trees and bushes; while pupæ and larvæ generally, and especially small green caterpillars, enter into its diet. According to Bechstein, it will, on its autumnal migration and in dearth of insects, eat elderberries.

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* It is these actions, some of which have been well described by Blyth (Field-Nat. ii. p. 50), that prompted Sir T. Browne to write of the Wryneck, which he calls a Hobby-bird (from its arriving in spring with, or a little before, the Hobbies), as being "maruellously subiect to the vertigo," and "sometimes taken in these fitts."

The Wryneck occasionally reaches England at the beginning of March and remains until towards the end of September. Generally one of the most unobtrusive of birds, it sits stiffly perched across a twig or branch, or clings sideways to the bole of a tree, seldom actually climbing, though quite able so to do. On the ground its gait and appearance are peculiar, for it advances with short jumps, and keeps its tail elevated. While feeding the body is motionless, and if disturbed it rises somewhat confusedly, with an undulatory flight making for the nearest shelter, which it has seldom far to seek. In autumn it is said to grow extremely fat, and in the south of Europe is much esteemed at that season for the table. It makes no nest; but is not incommoded, as is a Woodpecker, by the bedding brought by other birds into the hole it selects, to which it exhibits a strong attachment, occupying it year after year. The eggs, commonly laid on the bare wood, are pure white, glossy and translucent, hardly to be distinguished from those of the Lesser Spotted Woodpecker, though with a rather thicker shell, and on the average a little larger, measuring from ·87 to ·77 by from ·67 to ·61 in. In number they vary from six to ten; but the Wryneck is one of those birds that may be induced to go on laying many more. In 1833, Salmon by taking the eggs at four different times from the same nest obtained twenty-two from one bird (Mag. Nat. Hist. vii. pp. 465, 466); and some years later a like number were removed from one nest in as many successive days by Mr. Pemberton Bartlett (Zool. p. 449). Dillwyn (Fauna and Flora of Swansea, p. 6) mentions twenty-four eggs that were similarly taken near Bristol. More extraordinary however are the facts recorded of Mr. Norgate's experience (Zool. s.s. pp. 3227, 5081), for, between May 29th and July 13th, 1872, he took forty-two eggs from a Wryneck's nest, and in the following year as many more from the same hole—the produce no doubt of the same bird.

The young are easily though not often tamed, and are very entertaining in confinement, for they will not only feed from their keeper's hand, but climb over his clothes, probing with their long tongue every fold or opening, and in like manner examine all the furniture of the room, take flies from the window-pane and afford much amusement by their repeated encounters with one another (Zool. pp. 435, 436); but they do not generally live in captivity without greater care than most persons are able to render. In France, it is said, boys are accustomed to tie a thin string to one of the legs of the bird, and carrying it from tree to tree allow it to search the bark for insects.

The Wryneck is most common in the south-east of England, decreasing in number westwards, breeding but rarely in Devon, and in Cornwall, says Rodd, only met with in autumn. In Wales it occurs very sparingly, and, so far as has been ascertained by Mr. E. C. Phillips, only in the counties of Glamorgan, Caermarthen, Brecknock and Radnor. Mr. Beckwith says it is very rare in Shropshire, it is not included among the birds of Wirral by Mr. Brockholes, and according to Mr. More the nest has been only once found in Lancashire. Mr. W. E. Clarke (Vertebr. Yorkshire, p. 38) says it is extremely local, being confined to the south-east of the West Riding and adjacent part of the East Riding of York, and even there rare, though it has been killed in the breeding-season in Cleveland. It is however frequently seen in Durham, though far from common in Northumberland, and Mr. Hancock only knew of one locality in the district where it bred. Yet it is described as breeding regularly in Westmoreland, and its arrival at Carlisle was observed by Heysham for several years in succession. Across the border its appearance is much more rare. Jardine (Br. B. ii. p. 359) had one killed on the Solway, and one is said to have been found dead at Thornhill in Dumfriesshire in October 1857 (Nat. 1857, p. 283), while in the last Edition of this work one is said to have been lately killed near Glasgow. It has also occurred in the counties of Berwick and Roxburgh, and several times in East Lothian and Fife. Col. Drummond-Hay (Scott. Nat. iv. p. 333) believes it to be a regular though perhaps local visitor to Perthshire, and Mr. R. Gray cites an instance of its breeding in Inverness-shire, besides its occurrence in Aberdeenshire and Sutherland, while Mr. Edward (Zool. p. 6671) records one killed in Banffshire, and Mr. Shearer (Proc. R. Phys. Soc. Edinb. ii. p. 336) mentions two examples in Caithness. Baikie and Heddle record one caught at Sandwick in Orkney, and a second seems to have been got at Melsetter in 1841, while two came to the knowledge of Saxby in Shetland. Herr H. C. Müller and Major Feilden record three instances in the Færoes. A single example has been obtained in Ireland. This, as Mr. More informs the Editor, was shot near Dunmore in Waterford, in the summer of 1878, by Mr. Ernest Jacob, and exhibited by Mr. A. E. Jacob to the Biological Section of the British Association at its meeting in Dublin that year.

On the continent the Wryneck's range extends to about lat. 63° N. in Scandinavia, in Finland somewhat further and in Russia to Archangel; but on the eastern slopes of the Ural it has not been found north of Ekaterinburg. Thence it occurs across Siberia to Kamchatka, and is common in Japan, for the form visiting that country cannot be specifically separated, and is found in China, British Burma and almost throughout India. It is not uncommon as a bird of passage on the Arabian coast and in Egypt, and seems to winter in Bogos-land, Abyssinia and Kordofan, but further southward we have as yet no trace of it. In North-western Africa it commonly appears as a summer-visitant, though some examples very likely winter in Algeria, as they are believed to do in Greece and other parts of the south of Europe. Throughout the rest of Europe the species is pretty generally distributed.

The adult has the beak brown: the irides pale hazel: the upper plumage generally greyish-brown, produced by minute specks of blackish-brown on a light ground, with blackish-brown bars on the top of the head and lower part of the back, and broad stripes of the same colour on the nape, middle of the back, scapulars and tertials, varied also in places with buff patches, fine black streaks and a few irregular spots of greyish-white; the feathers of the fore part of the wing more regularly tipped with buff and barred with blackish-brown that often takes an arrow-headed form; the wing-quills dull brown, barred on the outer web with deep buff and having triangular spots of a paler buff on the margin of the inner web; tail-quills minutely freckled with brown, buff and greyish-white, with six irregular blackish-brown bars of varying width, each succeeded by a lighter transverse space; the lower plumage generally dull white, tinged more or less deeply with buff on the throat, flanks and tail-coverts, and barred with dark brown except on the breast and belly where the markings become arrow-headed in form: legs, toes and claws, brown.

The whole length is about seven inches. From the carpal joint to the tip of the wing, three inches and a quarter; the first primary is so small as to have often escaped notice,* the second and fourth nearly equal, longer than the fifth, but a little shorter than the third, which in this species is longest.

The female hardly differs from the male, but her plumage is rather less pure and bright. The young are more regularly barred beneath, and have the irides darker.

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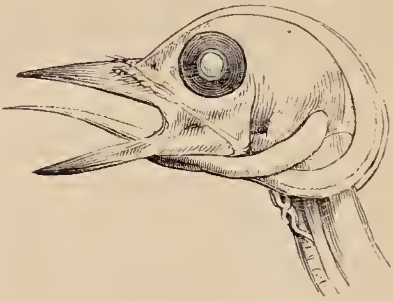
* In the African *I. pectoralis* the first primary is much larger, being one-third as long as the second, while the third and fourth are almost equal.

The vignette represents the head of the Wryneck. Of the two small thread-like muscles seen at the throat on the side of the windpipe, one, with its fellow on the other side of the neck, belongs to the trachea itself; the other assists in drawing the tongue back after it has been thrust forward.



[I am not responsible for anything that may follow by another Editor.

ALFRED NEWTON.]

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